

FIG. 1

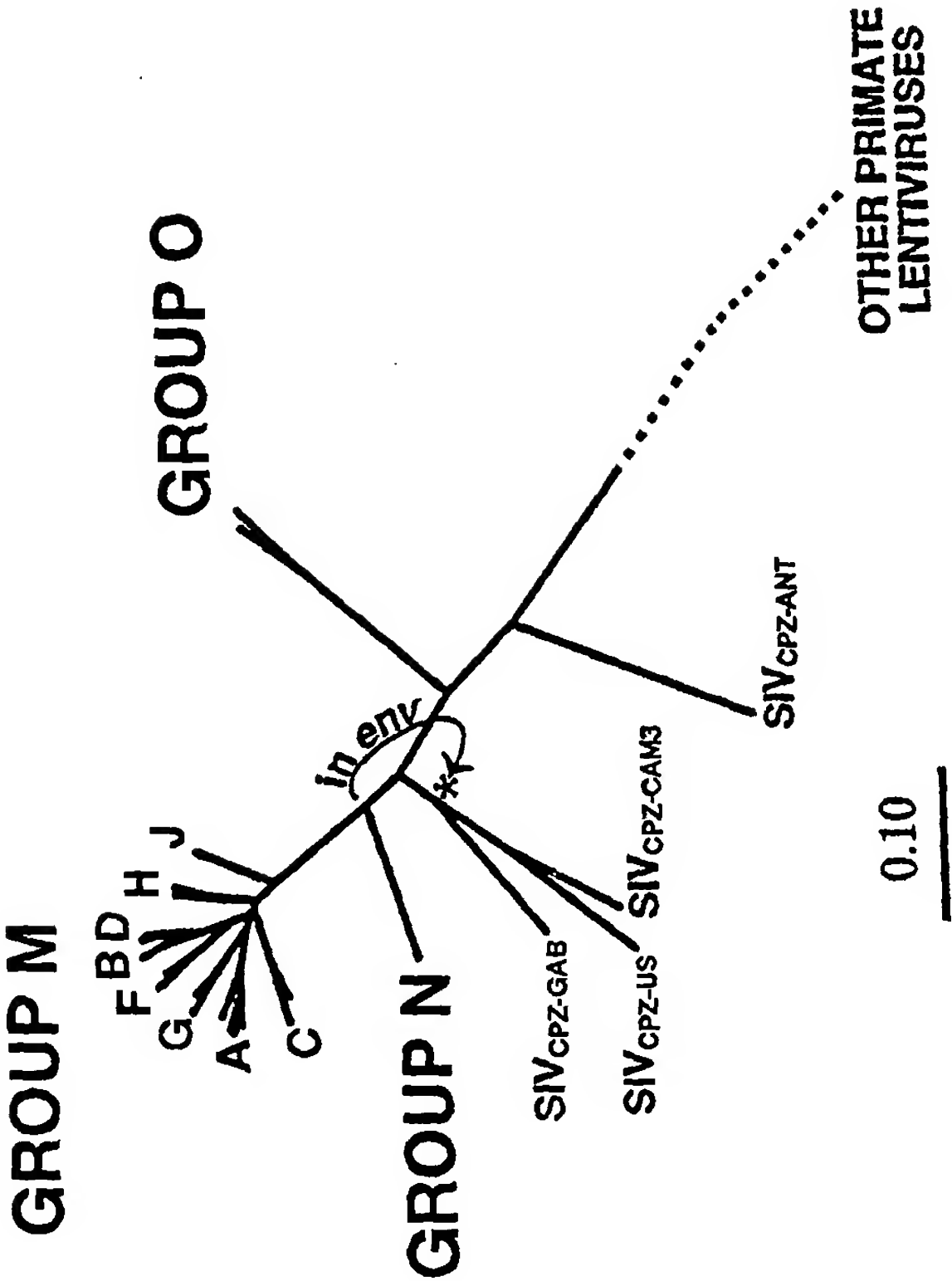


FIG. 2

Chemokine coreceptor used	PBMC replication	Macrophage replication	T-cell-line replication	REplicative phenotype	Syncytium-inducing phenotype
X4	+	-	+	Rapid/high	++
R5	+	+	-	Slow/low	-
R5/X4	+	+	+	Rapid/high	+

FIG. 3

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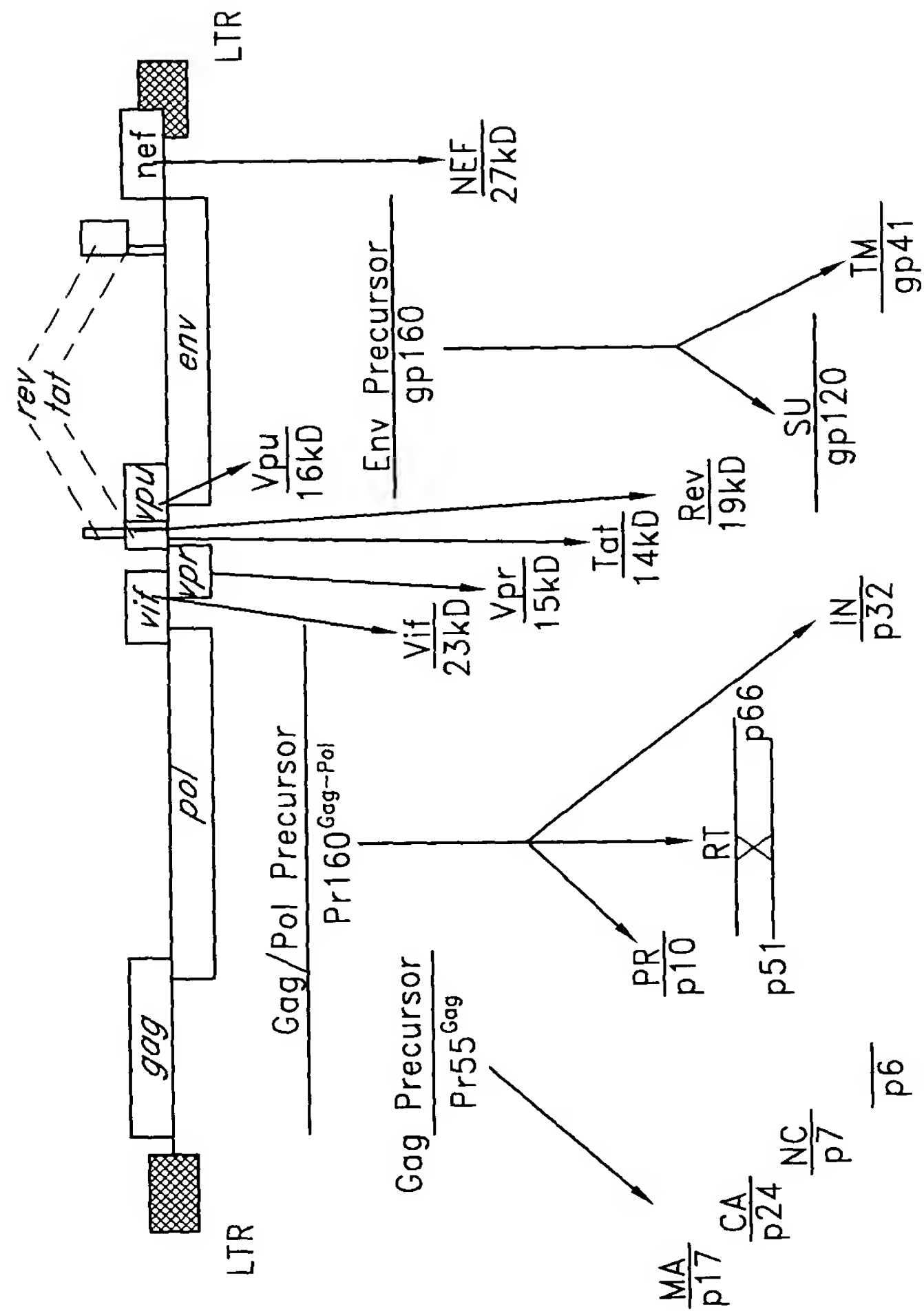


FIG. 4

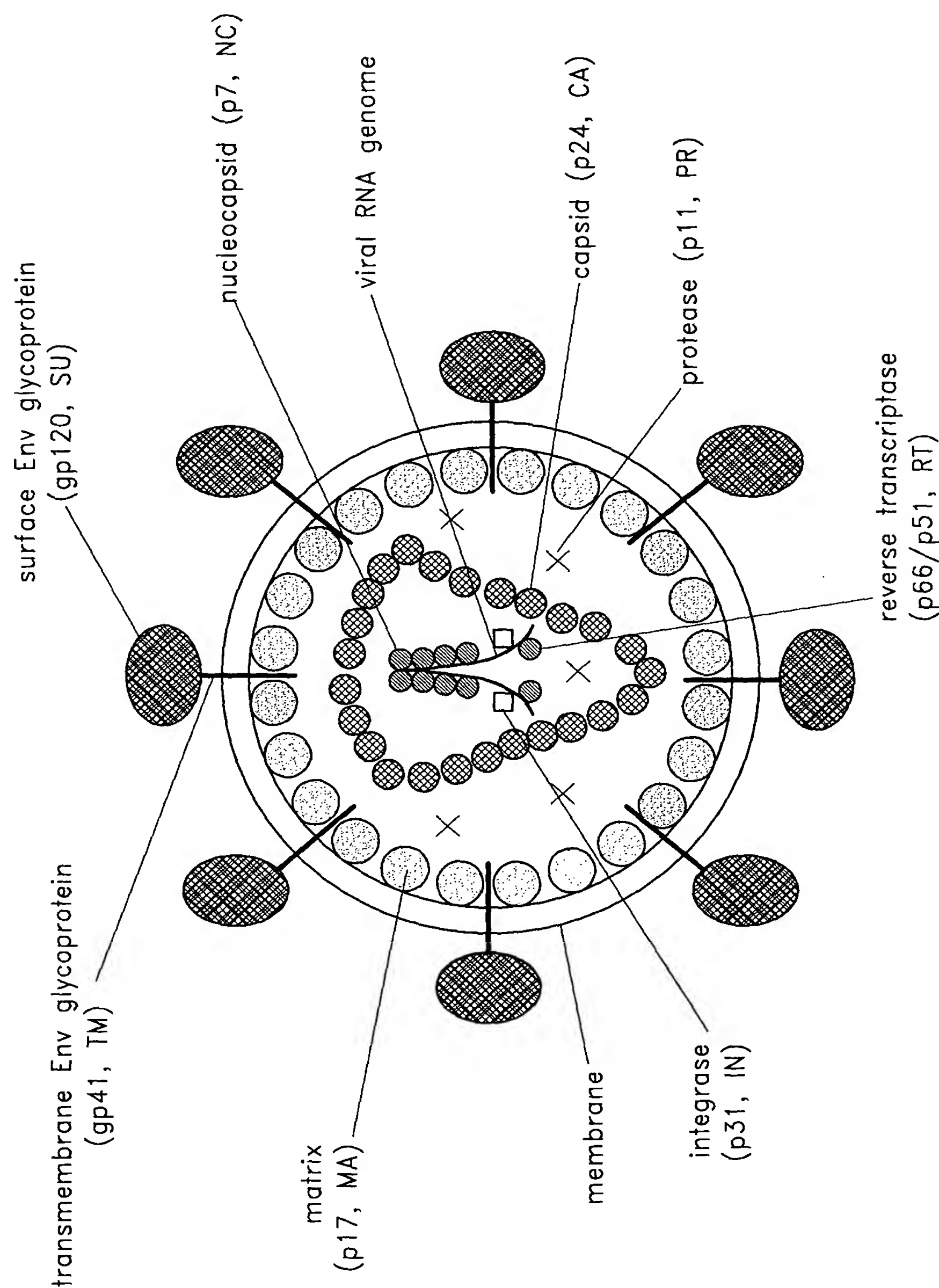


FIG. 5

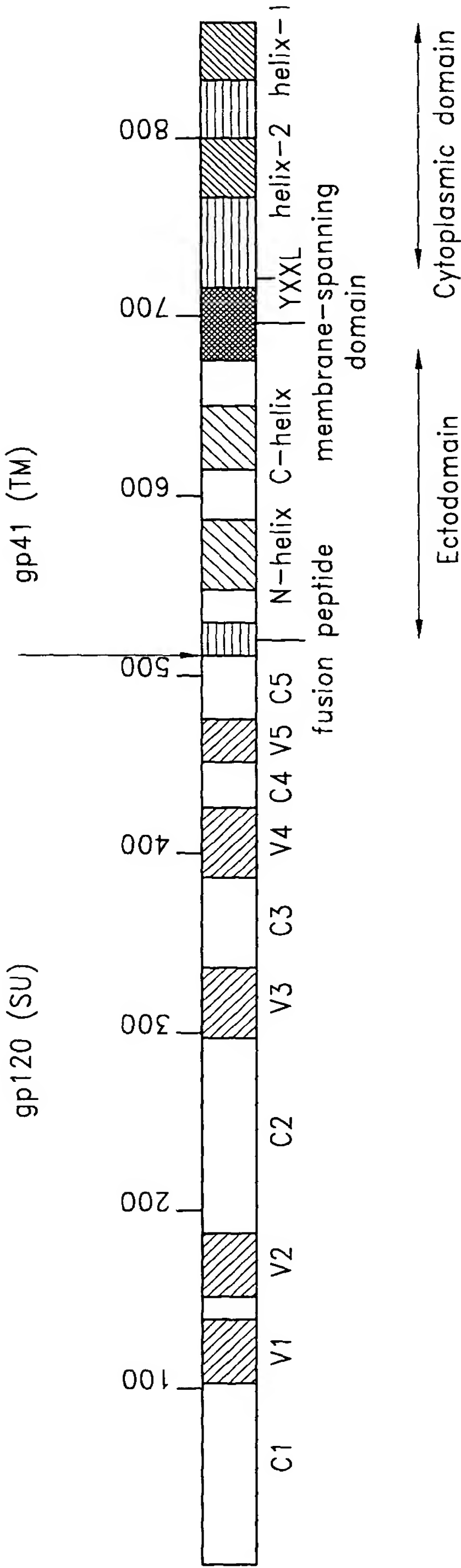


FIG. 6

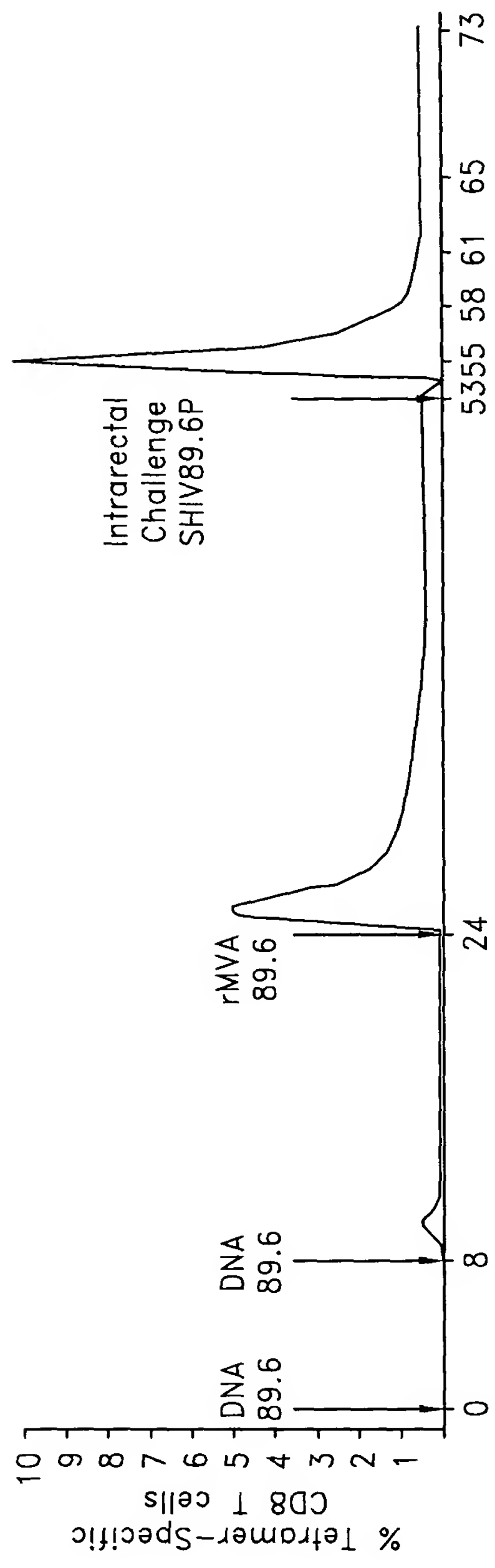


FIG. 7A

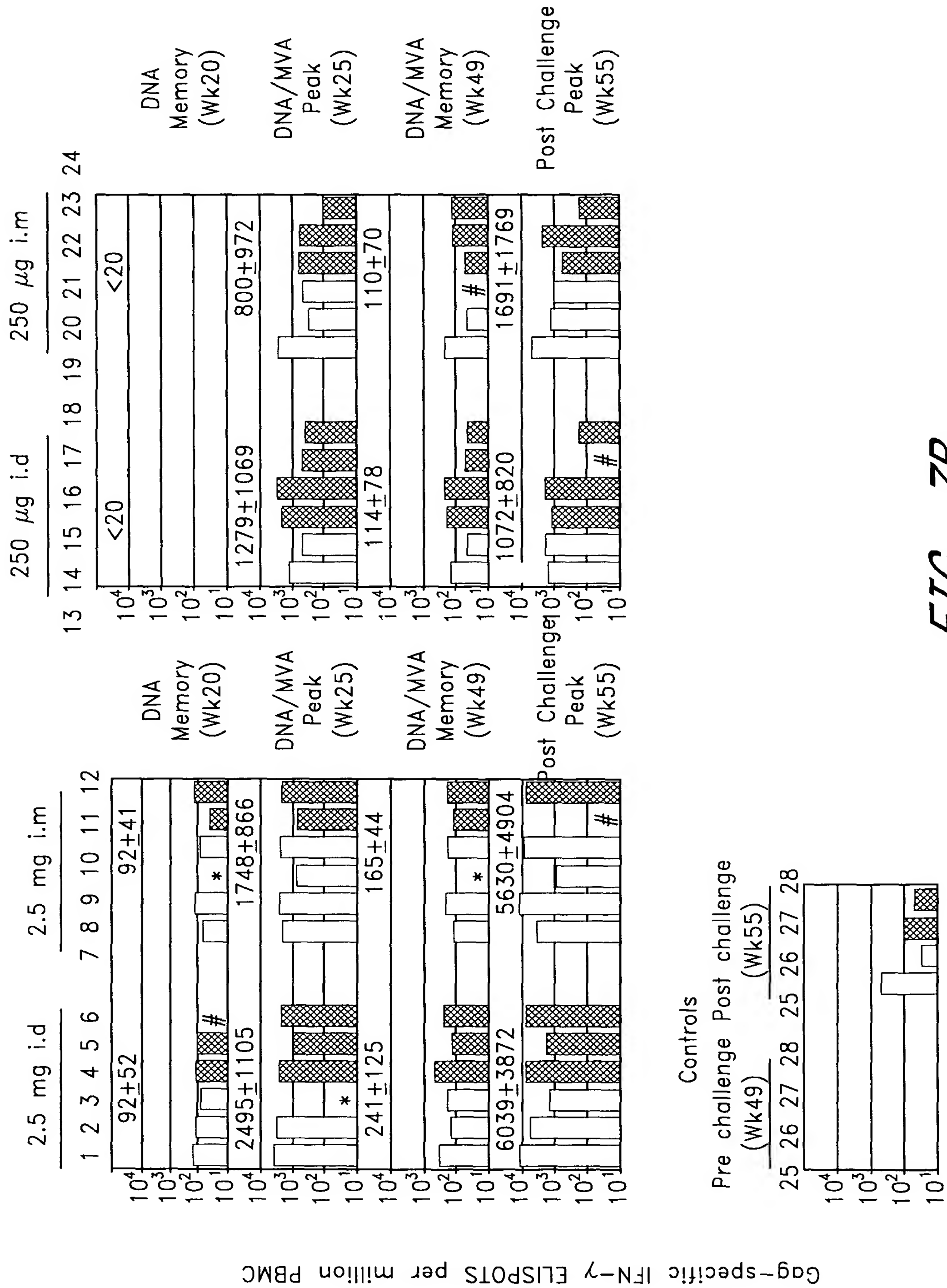


FIG. 7B

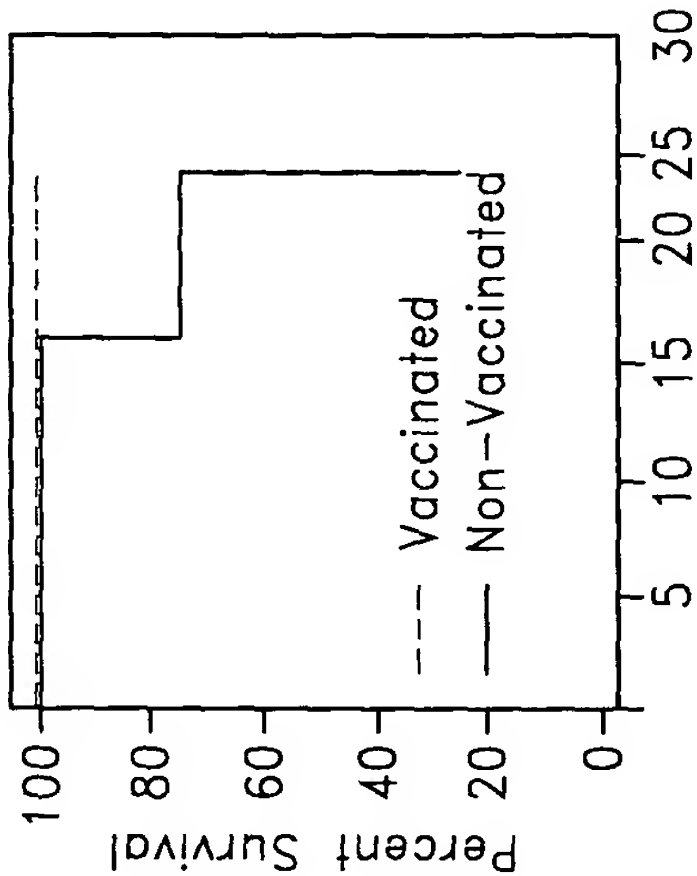


FIG. 8C

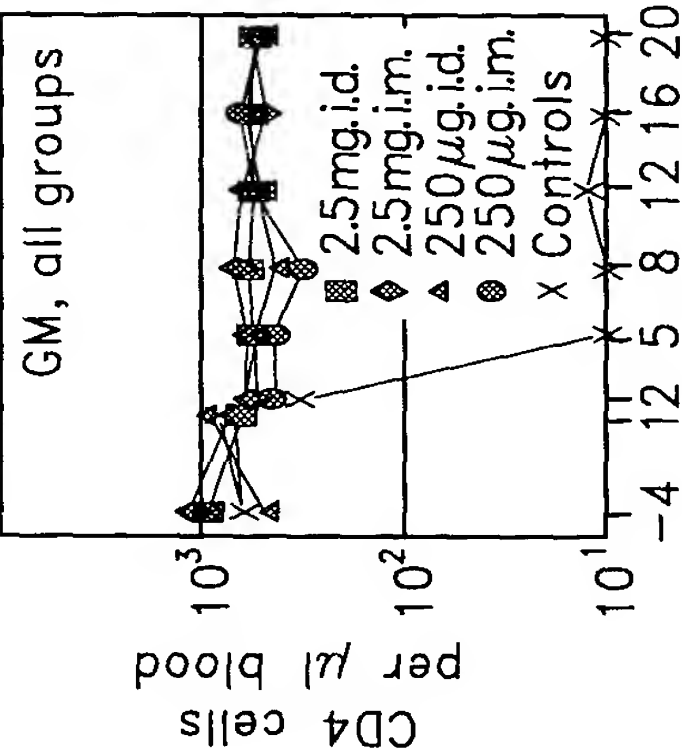


FIG. 8B

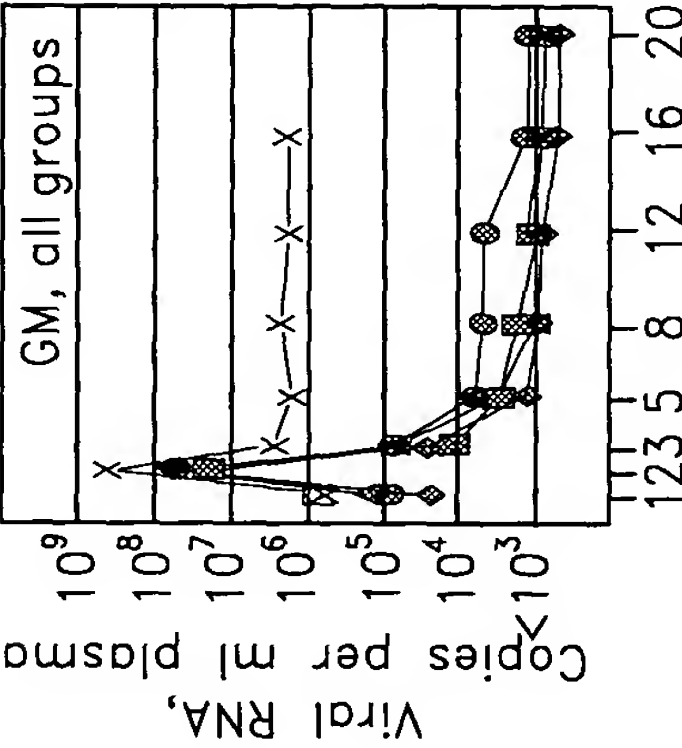


FIG. 8A

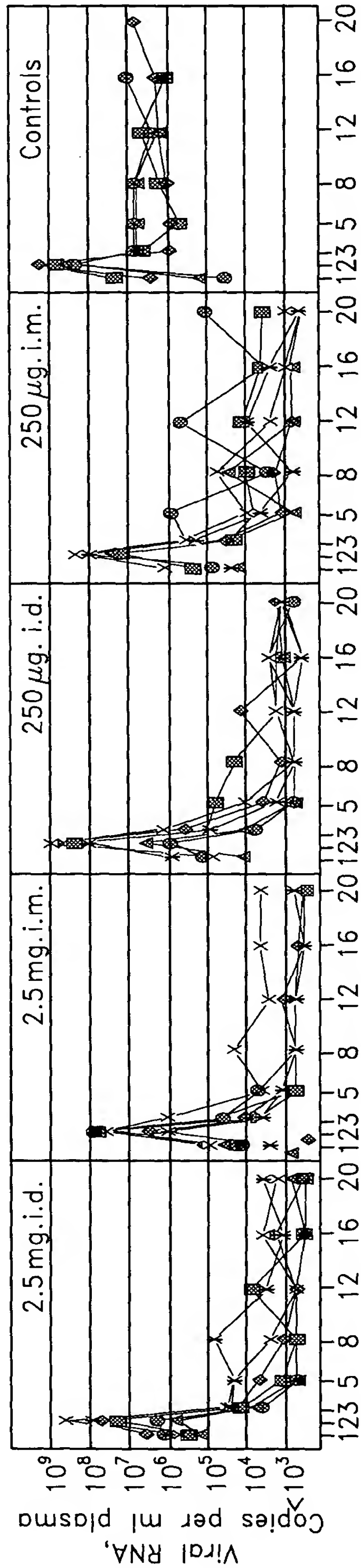


FIG. 8D

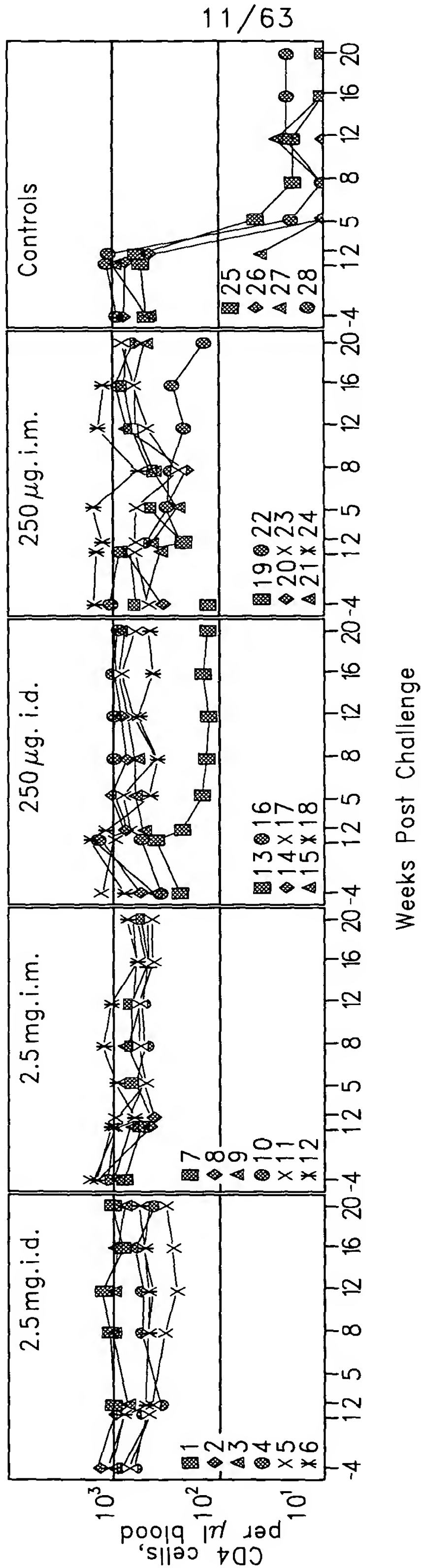


FIG. 8E

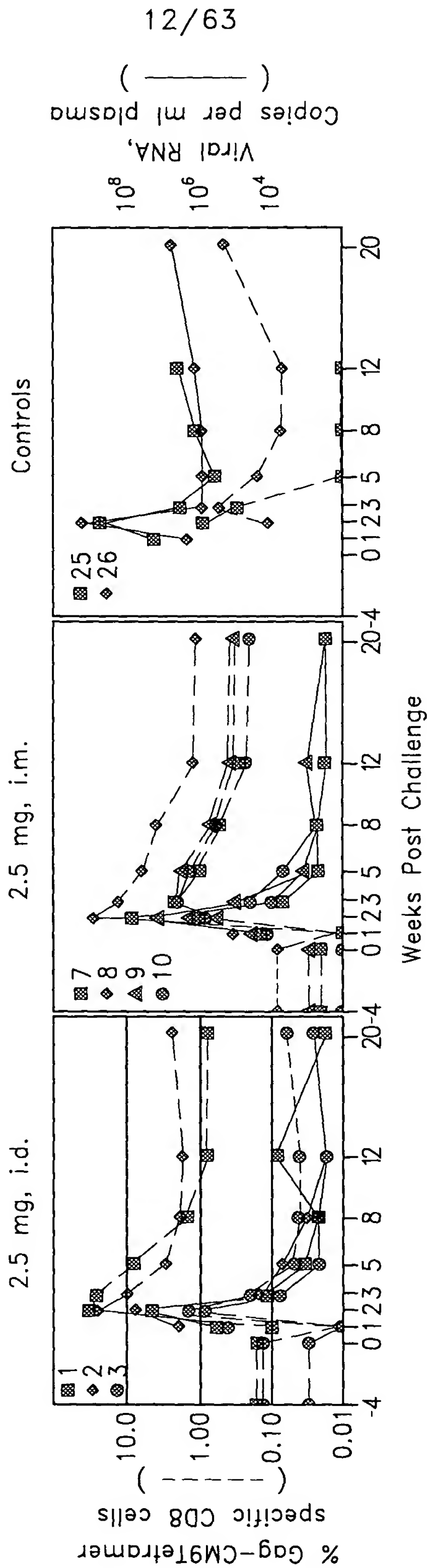


FIG. 9A

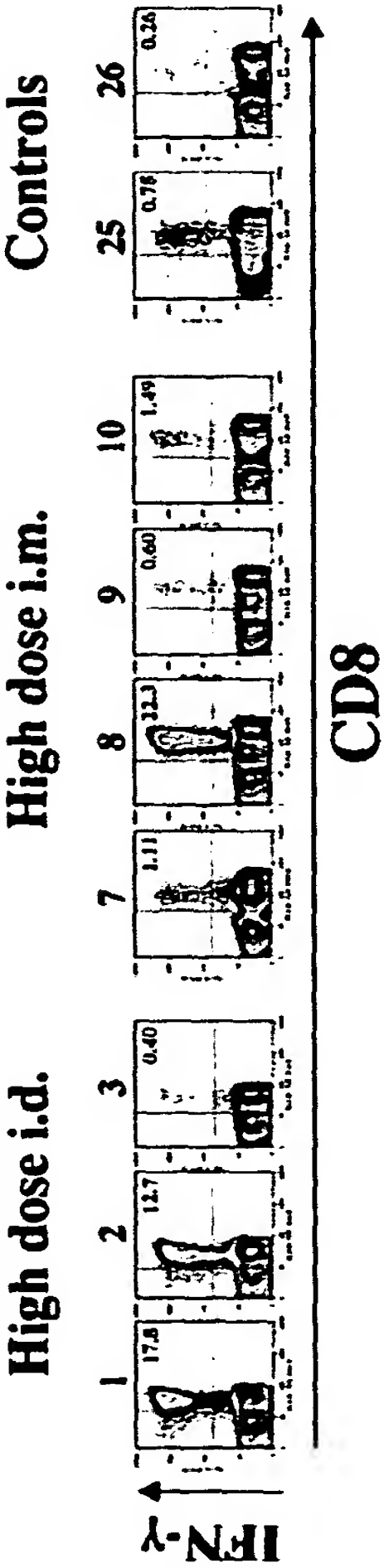


FIG. 9B

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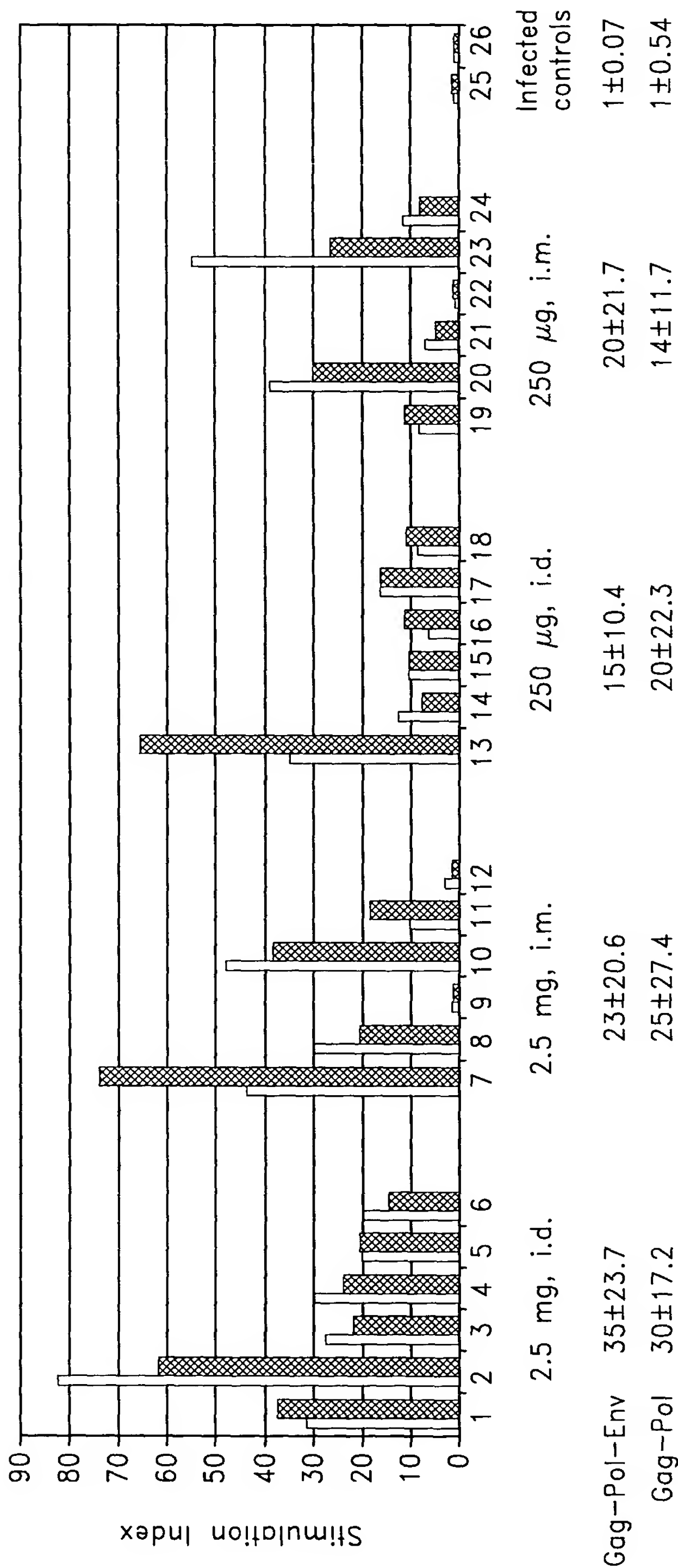


FIG. 9C



FIG. 10A FIG. 10B FIG. 10C

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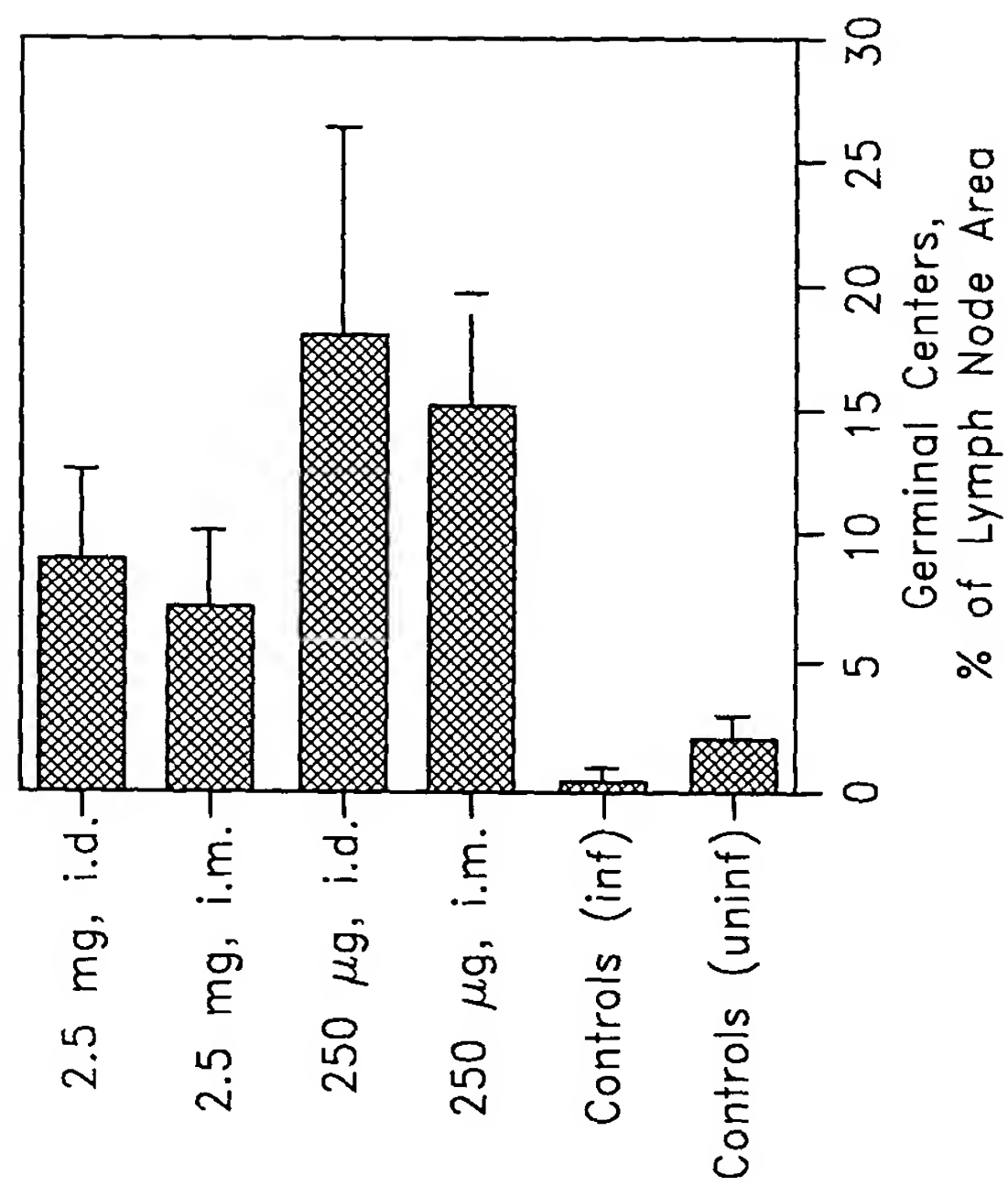


FIG. 10D

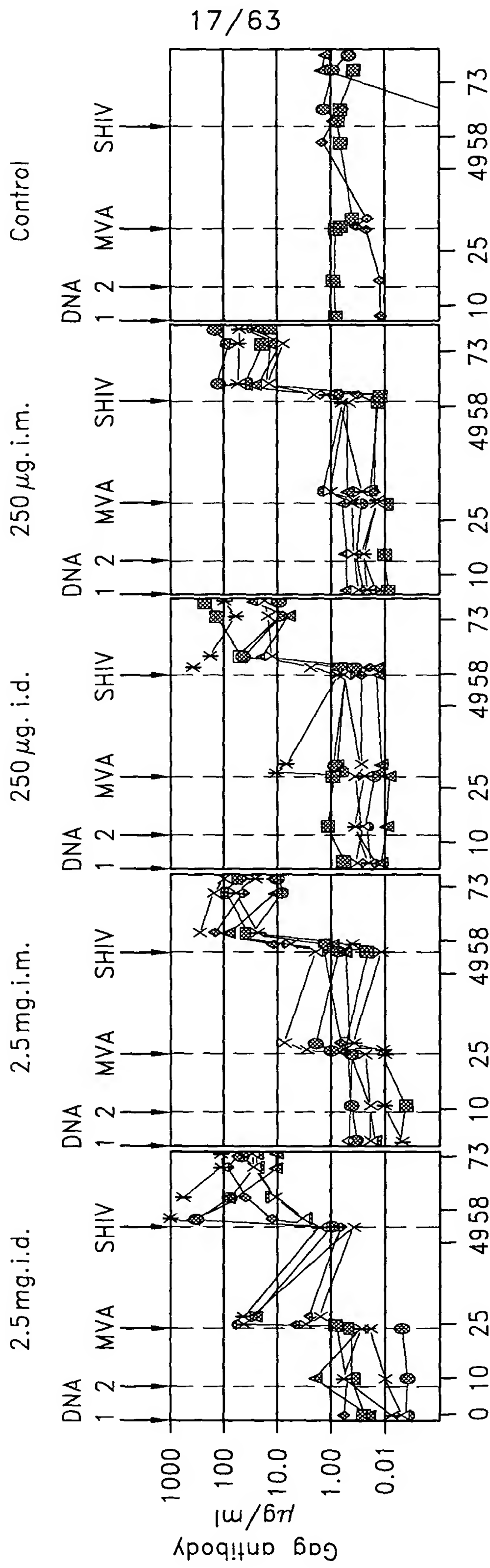


FIG. 11A

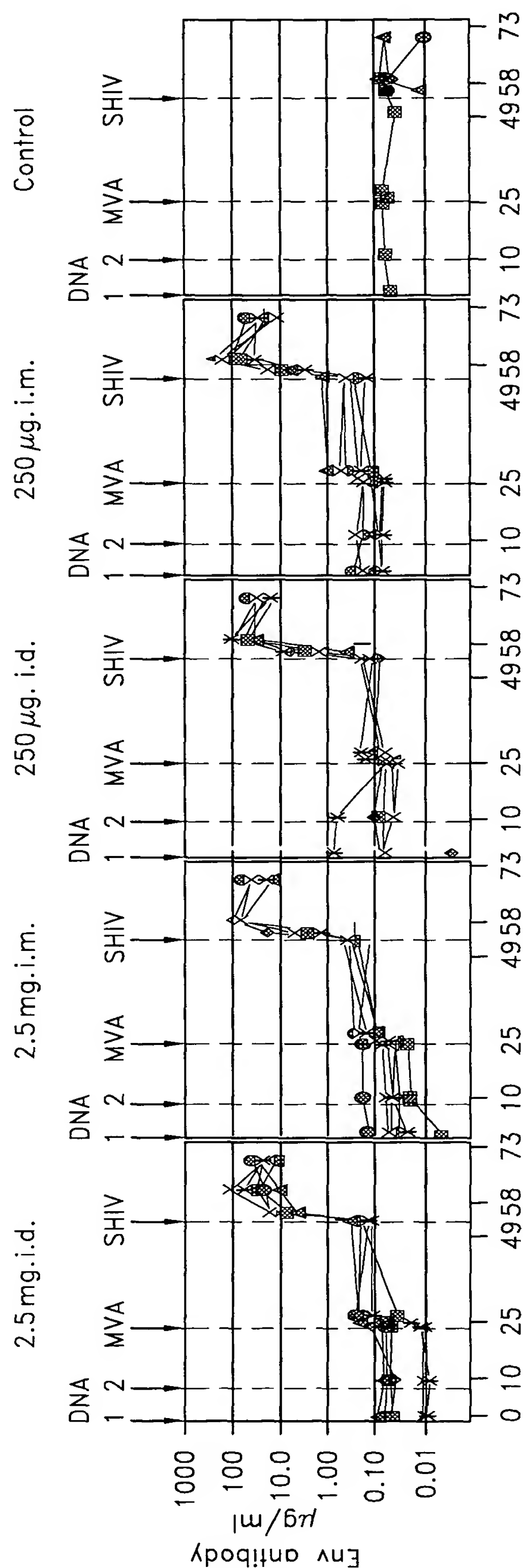


FIG. 11B

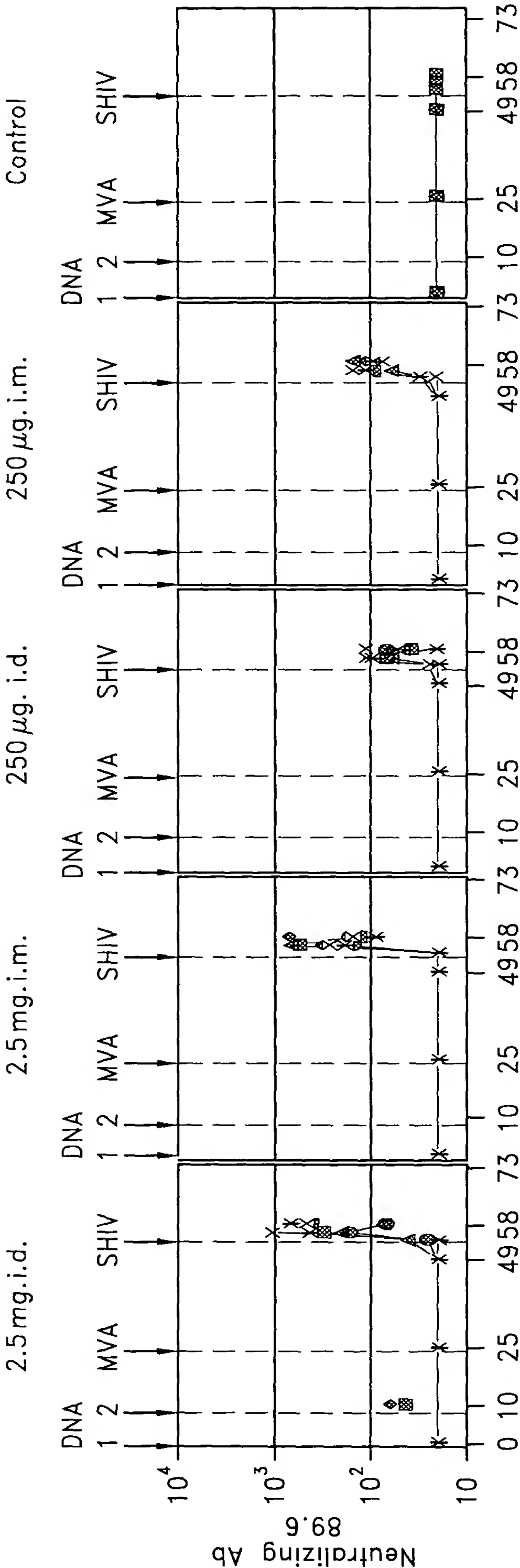


FIG. 11C

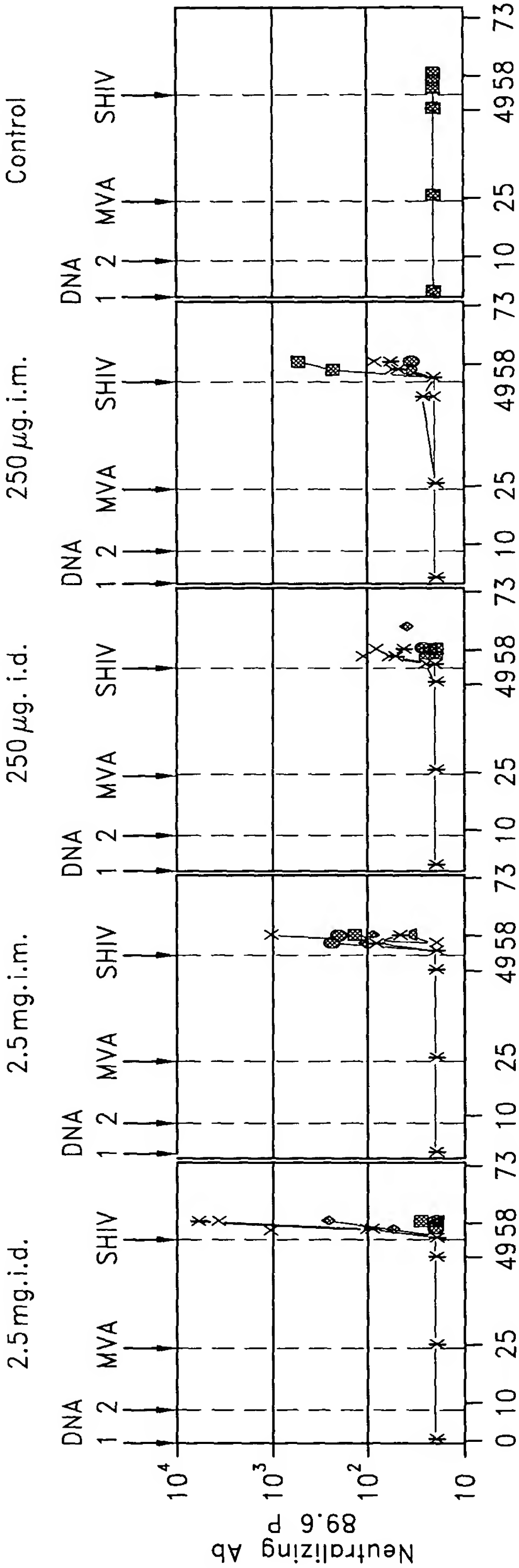


FIG. 11D

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Mamu-A*01 Gag-CM9 TETRAMER

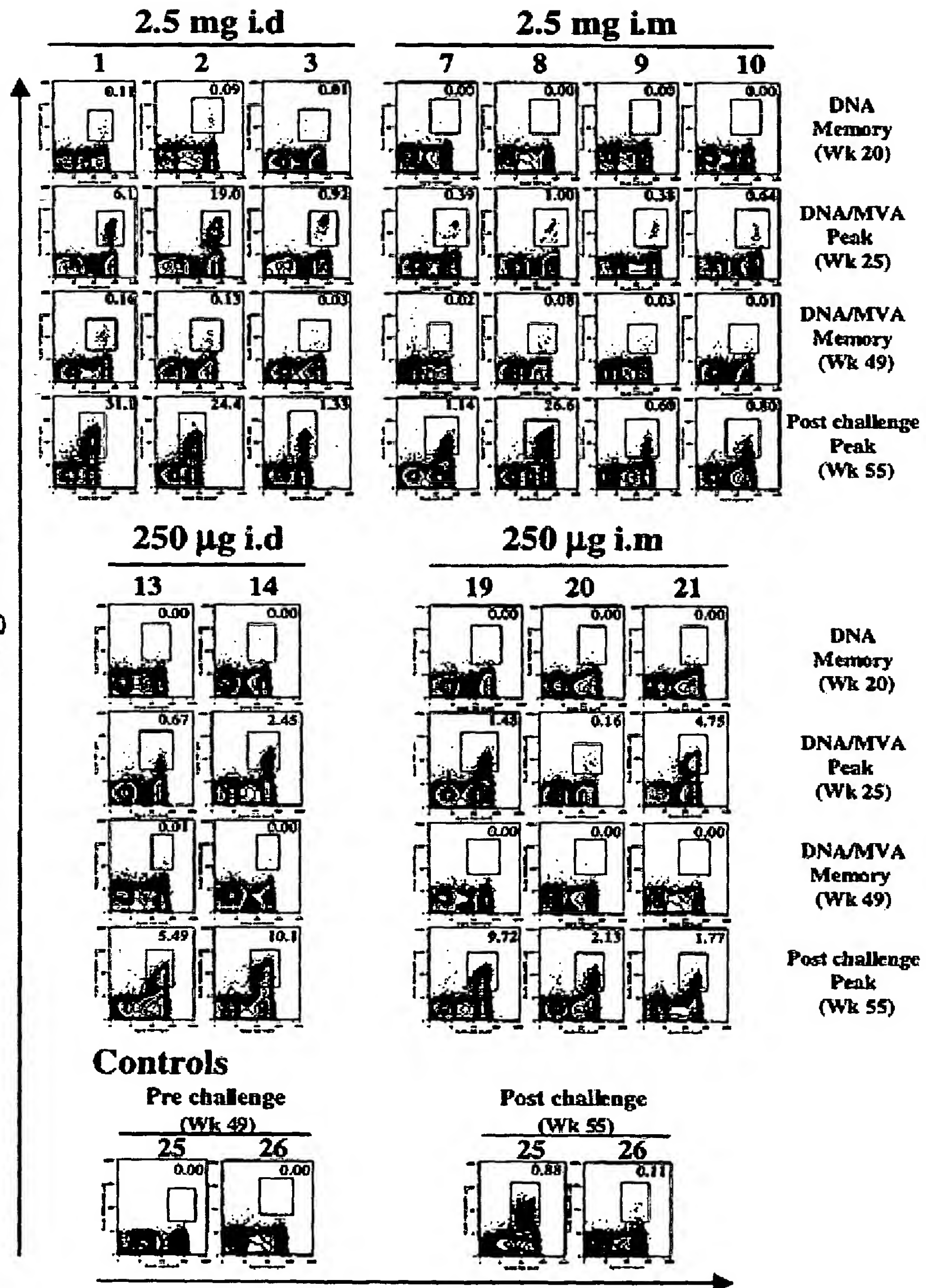


FIG. 12

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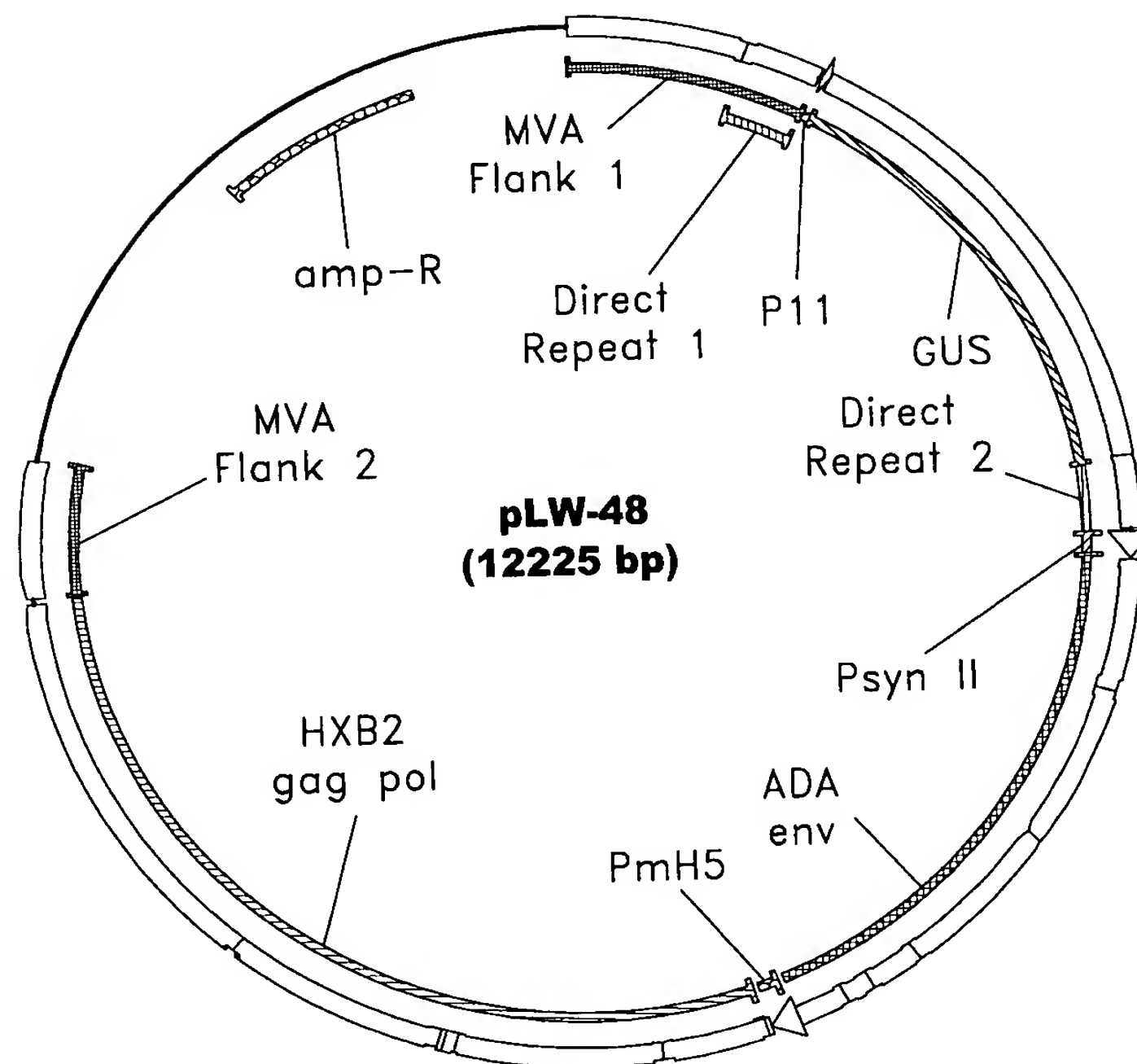


FIG. 13

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1 GAATTCCGTTG GTGGTCGCCA TGGATGGTGT TATTGTATAC TGTCTAAACG CGTTAGTAAA ACATGGCGGAG
CTTAAGCAAC CACCAGCGGT ACCTACCACA ATACATATG ACAGATTGCG GCAATCATTT TGTACCGGCTC

71 GAAATAAATC ATATAAAAAA TGATTTCATG ATTAAACCAT GTTGCGAAAA AGTCAAGAAC GTTCACATTC
CTTTATTAG TATATTTTIT ACTAAAGTAC TAATTGGTA CAACACTTTT TCAGTTCTTG CAAGTGTAAAC

141 GCGGACAATC TAAAAACAAT ACAGTGATTG CAGATTGGCC ATATATGGAT AATGCGGTAT CCGATGTATG
CGCCTGTTAG ATTTTGTGTA TGTCACCTAAC GTCTAAACGG TATATACCTA TTACGCCATA GGCTACATAC

211 CAATTCACTG TATAAAAGA ATGTATCAAG AATATCCAGA TTTGCTAATT TGATAAAGAT AGATGACGAT
GTTAAGTGAC ATATTTTCT TACATAGTTC TTATAGGTCT AAACGATTAA ACTATTCTA TCTACTGCTA

281 GACAAGACTC CTA CTGGTGT ATATAATTAT TTAAACCTA AAGATGCCAT TCCTGTTATT ATATCCATAG
CTGTTCTGAG GATGACCACA TATATTAATA AAATTGGAT TTCTACGGTA AGGACAAATA TATAGGTATC

351 GAAAGGATAG AGATGTTTGT GAACTATTAA TCTCATCTGA TAAAGCGTGT GCGTGTATAG AGTTAAATTC
CTTTCCTATC TCTACAAACA CTGATAATT AGAGTAGACT ATTTCGCACA CGCACATATC TCAATTTAAG

FIG. 14A

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421 ATATAAAGTA GCCATTCTTC CCATGGATGT TTCCTTTTTT ACCAAAGGAA ATGCATCATT GATTATTCTC
TATATTTCAT CCGTAAGAAG GGTACCCTACA AAGGAAAAAA TGGTTTCCTT TACGTAGTAA CTAATAAGAG

491 CTGTTTGATT TCTCTATCGA TCGGGCACCT CTCTTAAGAA GTGTAACCGA TAAATATGTT ATTATATCTA
GACAAACTAA AGAGATAGCT ACGCCGTGGA GAGAAATCTT CACATTCGCT ATTATTACAA TAATATAGAT

561 GACACCAGCG TCTACATGAC GAGCTTCCGA GTTCCAATTG GTTCAAGTTT TACATAAGTA TAAAGTCCGA
CTGTGGTCGC AGATGTACTG CTCGAAGGCT CAAGTTAAC CAAGTTCAAT ATGTATTCAT ATTTCAGGCT

631 CTATTGTTCT ATATTATATA TGGTTGTTGA TGGATCTGTG ATGCATGCAA TAGCTGATAA TAGAACTTAC
GATAACAAGA TATAATATAT ACCAACAACCT ACCTAGACAC TACGTACGTT ATCGACTATT ATCTTGAATG

701 GCAAATATTA GCAAAAATAT ATTAGACAAT ACTACAATTA ACGATGAGTG TAGATGCTGT TATTTTGAAC
CGTTATAAT CGTTTTATA TAATCTGTTA TGATGTTAAT TGCTACTCAC ATCTACGACA ATAAACTTG

FIG. 14B

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771 CACAGATTAG GATTCTTGAT ACAGATGAGA TGCTCAATGG ATCATCGTGT GATATGAACA GACATTGTAT
GTGTCTAATC CTAAGAACTA TCTCTACTCT ACGAGTTACC TAGTAGCACA CTATACTTGT CTGTAACATA

841 TATGATGAAT TTACCTGATG TAGGCGAATT TGGATCTAGT ATGTTGGGA AATATGAACC TGACATGATT
ATACTACTTA AATGGACTAC ATCCGCTTAA ACCTAGATCA TACAACCCCT TTATACTTGG ACTGTACTAA

911 AAGATTGCTC TTTCGGTGCC TGGGTACCAG GCGGCCCTTT CATTTTGT TTTCCTATGC TATAAATGGT
TTCTAACGAG AAAGCCACCG ACCCATGGTC CCGCGGAAA GTAAACAAA AAAAGATACG ATATTACCA

981 ACGTCCTGTA GAAACCCCAA CCGTGAAAT CAAAAACTC GACGGCCTGT GGGCATTCAG TCTGGATCGC
TGCAGGACAT CTTTGGGGTT GGGCACTTA GTTTTGTGAG CTGCCGGACA CCCGTAAGTC AGACCTAGCG

1051 GAAAACTGTG GAATTGATCA GCGTTGGTGG GAAAGCGCGT TACAAGAAAG CCGGGCAATT GCTGTGCCAG
CTTTTGACAC CTTAAGTAGT CGCAACCACC CTTTCGCGCA ATGTTCTTTC GGGCCCTTAA CGACACGGTC

FIG. 14C

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1121 GCAGTTTAA CGATCAGTTC GCCGATGCAG ATATTCTAA TTATCGGGC AACGTCTGGT ATCAGCGCGA
CGTCAAAATT GCTAGTCAAG CGGTACGTC TATAAGCATT AATACGCCCG TTGCAGACCA TAGTCGGCT

1191 AGTCTTTATA CCGAAAGGT GGCAGGCCA GGTATCGTG CTGCGTTTCG ATGCGGTCAC TCATTACGGC
TCAGAAATAT GGCTTTCCAA CCCGTCCGGT CGCATAGCAC GACGCAAGC TACGCCAGTG AGTAATGCCG

1261 AAAGTGTTGG TCAATAATCA GGAAGTGATG GAGCATCAGG GCGGCTATAC GCCATTTGAA GCCGATGTCA
TTTCACACCC AGTTATTAGT CCTTCACTAC CTCGTAGTCC CGCCGATATG CGGTAACTT CCGCTACAGT

1331 CGCCGTATGT TATTGCCGGG AAAAGTGATG GTATCACCGT TTGTGTGAAC AACGAACTGA ACTGGCAGAC
GCGGCATACA ATAACGGCCC TTTTCACATG CATAGTGCCA AACACACTTG TTGCTTGACT TGACCGTCTG

1401 TATCCCGCCG GGAATGGTGA TTACCGACCA AACCGGCAAG AAAAGCAGT CTTACTTCCA TGATTTCTTT
ATAGGGCGGC CCTTACCACT AATGGCTGCT TTGCGGTTT TTTTCGTCA GAATGAAGT ACTAAAGAAA

1471 AACTATGCCG GAATCCATCG CAGCGTAATG CTCTACACCA CGCCGAACAC CTGGGTGGAC GATATCACCG
TTGATACGGC CTTAGGTAGC GTCGCATTAC GAGATGTGGT CCGGCTTGTG GACCCACCTG CTATAGTGGC

FIG. 14D

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1541 TGGTGACGCA TGTCCGGCAA GACTCTAACC ACCGCTCTGT TGA CTGGCAG GTGGTGGCCA ATGGTGATGT
ACCACTGCCGT ACAGCGCGTT CTGACATTGG TGGCAGACA ACTGACCGTC CACCACCGGT TACCAC TACA

1611 CAGCGTTGAA CTGCGTGATG CCGATCAACA GGTGGTTGCA ACTGGACAAG GCACTAGCGG GACTTTGCAA
GTCCCAACTT GACGCCACTAC GCCTAGTTGT CCACCAACGT TGACCTGTTC CGTGATCGCC CTGAAACGTT

1681 GTGGTGAATC CGCACCTCTG GCAACCGGGT GAAGTTATC TCTATGAACT GTGCGTCACA GCCAAAAGCC
CACCACTTAG GCGTGGAGAC CGTTGGCCCA CTCCCAATAG AGATACTTGA CACGCAGTGT CGGTTTTCGG

1751 AGACAGAGTG TGATATCTAC CCGCTTCGG TCGGCATCCG GTCAGTGGA GTGAAGGCG AACAGTTCCT
TCTGTCTCAC ACTATAGATG GCGGAAGCG AGCCGTAGGC CAGTCACCGT CACTTCCCGC TTGTCAAGGA

1821 GATTAAACCAC AAACCGTTCT ACTTTACTGG CTTTGGTCTG CATGAAGATG CGGACTTGCG TGGCAAAGGA
CTAATTGGTG TTTGGCAAGA TGAATGACC GAAACCAGCA GTACTTCTAC GCCTGAACGC ACCGTTTCCT

1891 TTCCGATAACG TGCTGATGGT GCACGACCAC GCATTAAATGG ACTGGATTGG GGCCAACTCC TACCGTACCT
AAGCTATTGC ACGACTACCA CGTGCTGGTG CGTAATTACC TGACCTAACC CCGGTTGAGG ATGGCATGGA

FIG. 14E

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1961 CGCATTACCC TTACGCTGAA GAGATGCTCG ACTGGGCAGA TGAACATGGC ATCGTGGTGA TTGATGAAC
GCGTAATGGG AATCGGACTT CTCTACGAGC TGACCCGTCT ACTTGTAACG TAGCACCACT AACTACTTTC

2031 TGCTGCTGTC GGCTTTAACC TCTCTTTAGG CATTGGTTTC GAAGCGGGA ACAAGCCGAA AGAACTGTAC
ACGACGACAG CCGAAATTGG AGAGAAATCC GTAACCAAG CTTCGCCCTT TCTTGACATG

2101 AGCGAAGAGG CAGTCAACGG GGAACTCAG CAAGCGCACT TACAGCGAT TAAAGAGCTG ATAGCGCGTG
TCGCTTCTCC GTCAGTTGCC CCTTTGAGTC GTTCGCGTGA ATGTCCGCTA ATTTCTCGAC TATCGCGCAC

2171 ACAAAACCA CCCAAGCGTG GTGATGTGA GTATTGCCAA CGAACCGGAT ACCCGTCCGC AAGGTGCACG
TGTTTTTGGT GGGTTCCGAC CACTACACCT CATAACGGTT GCTTGCCCTA TGGCAGGCG TTCCACGTGC

2241 GGAATATTTC GCGCCACTGG CGGAAGCAAC GCGTAACTC GACCCGACGC GTCCGATCAC CTGCGTCAAT
CCTTATAAAG CGCGGTGACC GCGTTGTTG CGCATTGAG CTGGGCTGCC CAGGCTAGTG GACGCAGTTA

2311 GTAATGTTCT GCGACGCTCA CACCGATACC ATCAGCGATC TCTTTGATGT GCTGTGCCCTG AACCGTTATT
CATTACAAGA CGCTGCGAGT GTGGCTATGG TAGTCGCTAG AGAACTACA CGACACGGAC TTGGCAATAA

FIG. 14F

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2381 ACGCATGGTA TGTCCAAAGC GCGATTGGA AAACGGCAGA GAAGGTACTG GAAAAGAAC TTCTGGCCTG
TGCCTACCAT ACAGGTTTCG CCGCTAAACC TTGCGCGTCT CTTCCTATGAC CTTTCTCTG AAGACCGGAC

2451 GCAGGAGAAA CTGCATCAGC CGATTATCAT CACCGAATAC GCGGTGGATA CGTAGCCGG GCTGCACTCA
CGTCCCTCTT GACGTAGTCG GCTAATAGTA GTGGCTTATG CCGCACCTAT CCAATCGGCC CGACGTGAGT

2521 ATGTACACCG ACATGTGGAG TGAAGAGTAT CAGTGTGCAT GGCTGGATAT GTATCACCGC GTCTTTGATC
TACATGTGGC TGTACACCTC ACTTCTCATA GTCACACGTA CCGACCTATA CATAGTGGCG CAGAAACTAG

2591 GCGTCAGCGC CGTCGTGGT GAACAGGTAT GGAATTTCCG CGATTTTCCG ACCTCGCAAG GCATATTGCG
CGCAGTCGGC GCAGCAGCCA CTGTCCATA CCTAAACCG GCTAAACCG TGGAGCGTTC CGTATAACCG

2661 CGTTGGCGGT AACAGAAAG GGATCTTCAC TCGCGACCG AAACCGAAGT CGCGGCTTT TCTGCTGCAA
GCAACCGCCA TTGTCTTTC CCTAGAAGTG ACGCTGGCG TTGCGCTTCA CCGCCGAAA AGACGACGTT

2731 AAACCGTGA CTGGCATGAA CTTCGGTGAA AAACCGCAGC AGGAGGCAA ACAATGAGAG CTCGGTTGTT
TTTGGGACCT GACCGTACTT GAAGCCACTT TTGCGGTCG TCCCTCCGTT TGTTACTCTC GAGCCAACAA

FIG. 14G

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2801 GATGGATCTG TGATGCATGC AATAGCTGAT AATAGAACTT ACGCAAAATAT TAGCAAAAAT ATATTAGACA
CTACCTAGAC ACTACGTACG TTATCTTGAA TGCCTTTATA ATCGTTTTTA TATAATCTGT
=====

2871 ATACTACAAT TAACGATGAG TGTAGATGCT GTTATTTTGA ACCACAGATT AGGATTCTTG ATAGAGATGA
TATGATGTTA ATTGCTACTC ACATCTACGA CAATAAAACT TGGTGTCTAA TCCTAAGAAC TATCTCTACT
=====

2941 GATGCTCAAT GGATCATCGT GTGATATGAA CAGACATTGT ATTATGATGA ATTTACCTGA TGTAGGCCGAA
CTACGAGTTA CCTAGTAGCA CACTATACTT GTCTGTAAACA TAATACTACT TAAATGGACT ACATCCGCTT
=====

3011 TTTGGATCTA GTATGTTGGG GAAATATGAA CCTGACATGA TTAAGATTGC TCTTTCGGTG CCTGCGGGCC
AAACCTAGAT CATAACAACC CTTTATACTT GGA CTGTACT AATCTAACG AGAAAGCCAC CGACCGCCGG
=====

3081 CGCTCGAGTA AAAATGAAA AAATATTCTA ATTTATAGGA CGGTTTTGAT TTTCTTTTTT TCTATGCTAT
GCGAGCTCAT TTTTACTTT TTTATAAGAT TAAATATCCT GCCAAAACTA AAAGAAAAAA AGATACGATA
=====

3151 AAATAATAAA TAGCGGCCCG ACCATGAAAG TGAAGGGGAT CAGGAAGAAT TATCAGCACT TGTGGAATG
TTTATTATT ATCGCCCGCG TGTACTTTC ACTTCCCCCTA GTCCTTCTTA ATAGTCGTGA ACACCTTTAC
=====

FIG. 14H

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3221 GGGCATCATG CTCCTTGGGA TGTTGATGAT CTGTAGTGCT GTAGAAAATT TGTGGGTCAC AGTTTATTAT
CCCCGTAGTAC GAGGAACCCCT ACAACTACTA GACATCACGA CATCTTTTAA ACACCCAGTG TCAAATAATA

3291 GGGGTACCTG TGTGGAAGA AGCAACCACC ACTCTATTTT GTGCATCAGA TGCTAAAGCA TATGATACAG
CCCCATGGAC ACACCTTTCT TCGTTGGTGG TGAGATAAAA CACGTAGTCT ACCATTTCGT ATACTATGTC

3361 AGGTACATAA TGTTTGGGCC ACACATGCCT GTGTACCCAC AGACCCCAAC CCACAAGAAG TAGTATTGGA
TCCATGTATT ACAAAACCCGG TGTGTACGGA CACATGGGTG TCTGGGGTTG GGTGTTCTTC ATCATAACCT

3431 AAATGTGACA GAAAATTTTA ACATGTGGAA AAATAACATG GTAGAACAGA TGCATGAGGA TATAATCAGT
TTTACACTGT CTTTTAAAT TGTACACCCT TTTATTGTAC CATCTGTCT ACGTACTCCT ATATTAGTCA

3501 TTATGGGATC AAAGCCTAAA GCCATGTGTA AAATTAACCC CACTCTGTGT TACTTTAAAT TGCCTGATT
AATACCCCTAG TTTCGGATT CCGTACACAT TTAAATTGGG GTGAGACACA ATGAAATTTA ACGTGACTAA

3571 TGAGGAATGT TACTAATATC AATAATAGTA GTCAGGGAAT GAGAGGAGAA ATAAAAACT GCTCTTTCAA
ACTCCTTACA ATGATTATAG TTATTATCAT CACTCCCTTA CTCTCCTCTT TATTTTGA CGAGAAAGTT

FIG. 14I

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3641 TATCACCACA AGCATAAGAG ATAAGGTGAA GAAAGACTAT GCACCTTTCT ATAGACTTGA TGTAGTACCA
ATAGTGGTGT TCGTATTCTC TATTCCACTT CTTTCTGATA CGTGAAAAGA TATCTGAACT ACATCATGGT

3711 ATAGATAATG ATAATACTAG CTATAGGTG ATAAATTGTA ATACCTCAAC CATTACACAG GCCTGTCCAA
TATCTATTAC TATTATGATC GATATCCAAC TATTTAACAT TATGGAGTTG GTAATGTGTC CGGACAGGTT

3781 AGGTATCCTT TGAGCCAATT CCCATACATT ATTGTACCCC GGCTGGTTTT GCGATTCTAA AGTGTAAGA
TCCATAGGAA ACTCGGTAA GGTATGTAA TAACATGGG CCGACCAAAA CGCTAAGATT TCACATTTCT

3851 CAAGAAGTTC AATGGAACAG GGCCATGTAA AATGTCAGC ACAGTACAAT GTACACATGG AATTAGGCCA
GTTCTTCAAG TTACCTTGTC CCGGTACATT TTTACAGTCG TGTCATGTTA CATGTGTACC TTAATCCGGT

3921 GTAGTGTCAA CTCAACTGCT GTTAAATGGC AGCTAGCAG AAGAAGAGGT AGTAATTAGA TCTAGTAATT
CATCACAGTT GAGTTGACGA CAATTTACCG TCAGATCGTC TTCTTCTCCA TCATTAATCT AGATCATTA

3991 TCACAGACAA TGCAAAAAAC ATAATAGTAC AGTTGAAAGA ATCTGTAGAA ATTAATTGTA CAAGACCCAA
AGTGTCTGTT ACGTTTTTGG TATTATCATG TCAACTTTCT TAGACATCTT TAATTAACAT GTTCTGGGTT

FIG. 14J

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4061 CAACAATACA AGGAAAGTA TACATATAGG ACCAGGAAGA GCATTTTATA CAACAGGAGA AATAATAGCA
GTTGTTATGT TCCTTTTCAI ATGTATATCC TGGTCCTTCT CGTAAATAT GTTGTCCCTCT TTATTATCCT

4131 GATATAAGAC AAGCACATTG CAACATTAGT AGAACAAAT GGAATAACAC TTAAATCAA ATAGCTACAA
CTATATTCTG TTCGTGTAAC GTTGTAATCA TCTTGTTTAA CCTTATTGTG AAATTAGTT TATCGATGTT

4201 AATTAAAGA ACAATTGCGG AATAATAAA CAATAGTCTT TAATCAATCC TCAGGAGGGG ACCCAGAAAT
TTAATTTTCT TGTAAACCC TTATTATTT GTTATCAGAA ATTAGTTAGG AGTCCCTCCC TGGGTCTTTA

4271 TGTAATGCAC AGTTTAAAT GTGGAGGGA ATTCTTCTAC TGTAATTCAA CACAACTGTT TAATAGTACT
ACATTACGTG TCAAAATTAA CACCTCCCCC TAAGAAGATG ACATTAAAGT GTGTTGACAA ATTATCATGA

4341 TGGAAATTTA ATGGTACTG GAATTTAACA CAATCGAATG GTACTGAAGG AAATGACACT ATCACACTCC
ACCTTAAAT TACCATGAAC CTTAAATTGT GTTAGCTTAC CATGACTTCC TTTACTGTGA TAGTGTGAGG

4411 CATGTAGAAT AAAACAAAT ATAAATATGT GGCAGGAAGT AGGAAAAGCA ATGTATCCCC CTCCCATCAG
GTACATCTTA TTTTGTTAA TATTATACA CCGTCCCTCA TCCTTTTCGT TACATACGGG GAGGGTAGTC

FIG. 14K

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4481 AGGACAAATT AGATGCTCAT CAAATATTAC AGGCTAATA TTAACAAGAG ATGCTGGAAC TAACAGTAGT
TCCTGTTTAA TCTACGAGTA GTTTATAATG TCCCGATTAT AATTGTTCTC TACCACCTTG ATTGTCATCA

4551 GGGTCCGAGA TCTTCAGACC TGGGGGAGGA GATATGAGGG ACAATTGGAG AAGTGAATTA TATAAATATA
CCCAGGCTCT AGAAGTCTGG ACCCCCTCCT CTATACTCCC TGTTAACCTC TTCACTTAAT ATATTTATAT

4621 AAGTAGTAA AATTGAACCA TTAGGAGTAG CACCACCAA GGCAAAAGA AGAGTGGTGC AGAGAGAAAA
TTCATCATTT TTAAGTTGGT AATCCTCATC GTGGGTGGTT CCGTTTTTCT TCTCACCAGG TCTCTCTTTT

4691 AAGAGCAGTG GGAACGATAG GAGCTATGTT CCTTGGGTTC TTGGGAGCAG CAGGAAGCAC TATGGGCGCA
TTCTCGTCAC CCTTGCTATC CTCGATACAA GGAACCCAAG AACCTCGTC GTCTTCGTG ATACCCCGGT

4761 GCGTCAATAA CGCTGACGGT ACAGGCCAGA CTATTATTGT CTGGTATAGT GCAACAGCAG AACAAATTGC
CGCAGTTATT GCGACTGCCA TGTCGGGTCT GATAATAACA GACCATATCA CGTTGTCGTC TTGTTAAACG

4831 TGAGGGCTAT TGAGGGGCAA CAGCATCTGT TGCAACTCAC AGTCTGGGGC ATCAAGCAGC TCCAGGCAAG
ACTCCCGATA ACTCCGCGTT CTCGTAGACA ACGTTGAGTG TCAGACCCCG TAGTTTCGTG AGGTCCGTTT

FIG. 14L

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4901 AGTCCTGGCT CTGGAAGAT ACCTAAGGA TCAACAGCTC CTAGGATTT GGGTTGCTC TGGAAACTC
TCAGGACCGA CACCTTTCTA TGGATTCCCT AGTTGTCGAG GATCCCTAAA CCCCAACGAG ACCTTTGTGAG

4971 ATCTGCACCA CTGCTGTGCC TTGGAATGCT AGTTGGAGTA ATAAACTCT GGATATGATT TGGGATAACA
TAGACCTGGT CACGACACCG AACCTTACGA TCAACCTCAT TATTGTGAGA CCTATACTAA ACCCTATTGT

5041 TGACCTGGAT GGAGTGGGA AGAGAAATCG AAAATTACAC AGGCTTAATA TACACCTTAA TTGAGGAATC
ACTGGACCTA CCTCACCCCT TCTCTTTAGC TTTTAATGTG TCCGAATTAT ATGTGGAATT AACTCCTTAG

5111 GCAGAACCAA CAAGAAAGA ATGAACAAGA CTTATTAGCA TTAGATAAGT GGGCAAGTTT GTGGAATTGG
CGTCTTGGTT GTTCTTTTCT TACTTGTCT GAATAATCGT AATCTATTCA CCCGTTCAAA CACCTTAACC

5181 TTTGACATAT CAAATTGGCT GTGGTATGTA AAAATCTTCA TAATGATAGT AGGAGGCTTG ATAGGTTTAA
AAACTGTATA GTTTAACCGA CACCATACAT TTTTAGAAGT ATTACTATCA TCCTCCGAAC TATCCAAATT

5251 GAATAGTTT TACTGTACTT TCTATAGTAA ATAGAGTTAG GCAGGGATAC TCACCATTTGT CATTTCAGAC
CTTATCAAAA ATGACATGAA AGATATCATT TATCTCAATC CGTCCCCTATG AGTGGTAACA GTAAAGTCTG

FIG. 14M

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5321 CCACCTCCCA GCCCGGAGGG GACCCGACAG GCCCGAAGGA ATCGAAGAAG AAGGTGGAGA CAGAGACTAA
GGTGCAGGGT CCGGGCTCCC CTGGGCTGTC CCGGCTTCCT TAGCTTCTTC TTCCACCTCT GTCTCTGATT

5391 TTTTATGCG GCCGCTGGTA CCAACCTAA AATTGAAAA TAAATACAAA GGTCTTGAG GGTGTGTTA
AAAAATACGC CGCGGACCAT GGTGTGATT TTAACTTTT ATTTATGTTT CCAAGAATC CCAACACAAT

5461 AATTGAAAGC GAGAAATAAT CATAATAAG CCCGGGATC CTCTAGATC GACCATGG GTGCGAGAGC
TTAACTTTCG CTCCTTATTA GTATTATTC GGGCCCTAG GAGATCTCAG CTGTGGTACC CACGCTCTCG

5531 GTCAGTATTA AGCGGGGAG AATTAGATCG ATGGGAAAA ATTCGGTTAA GGCCAGGGG AAAGAAAAA
CAGTCATAAT TCGCCCCCTC TTAATCTAGC TACCTTTT TAAGCCAATT CCGTCCCCC TTTCTTTT

5601 TATAAATTAA AACATATAGT ATGGGCAAGC AGGAGCTAG AACGATTCGC AGTTAATCCT GGCCTGTAG
ATATTTAATT TTGTATATCA TACCCGTTCC TCCCTCGATC TTGCTAAGCG TCAATTAGGA CCGGACAATC

5671 AACATCAGA AGGCTGTAGA CAAATACTGG GACAGCTACA ACCATCCCCTT CAGACAGGAT CAGAAGAACT
TTTGTAGTCT TCCGACATCT GTTTATGACC CTGTCGATGT TGGTAGGAA GTCTGTCCCTA GTCTTCTGA

FIG. 14N

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5741 TAGATCATTATAAATACAGTAGCAACCCTCTATTGTGTGCATCAAAAGGATAGAGATAAAAGACACCAAG
ATCTAGTAATATATTATGTCATCGTTGGGAGATAACACACGTAGTTTCCTATCTCTATTCTCTGGTTC

5811 GAAGCTTTAGACAAGATAGAGAGAGCAAAACAAGTAAGAAAAAGCACAGCAAGCAACAGCTGACA
CTTCGAAATCTGTTCTATCTCCTTCTCGTTTGTGTTTCATCTTTTTCGTGTCGTTTCCTCGTCTGACTGT

5881 CAGGACACAGCAATCAGGTCAGCCAAATTACCCTATAGTGCAGAACATCAGGGGCAAA TGGTACATCA
CTCCTGTGTCGTTAGTCCAGTCGGTTTAA TGGGATATCA CGTCTGTAGGTCCCCGTTTACCATGTAGT

5951 GGCCATATCA CCTAGAACTTAAATGCATG GGTAAAGTAGTAAGAGAGAGAGAGCTTTTCAG CCCAGAACTG
CCGGTATAGTGGATCTTGAAATTACGTACCCATTTTCATCATCTTCTCTCCGAAAGTCGGTCTTCAC

6021 ATACCCATGT TTTACGATTATCAGAGGAGCCACCCACAGATTAAACACATGCTAACACAGTGG
TATGGGTACA AAGTCGTAA TAGTCTTCCTCGTGCGGTGTTCTAAATTTGTGGTACCATTTGTGTCACC

6091 GGGACATCAAGCAGCCATGCAATGTAAAGAGACCATCAATGAGGAGCTGCAGAACTGGATAGAGT
CCCCTGTAGTTCGTGGTACGTTACAATTTCTCTGGTGTACTCCTCGACGTCTTCCCTATCTCA

FIG. 140

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6161 GCATCCAGTG CATGCAGGGC CTATTGCACC AGGCCAGATG AGAGAACCAA GGGGAAGTGA CATAGCAGGA
CGTAGGTCAC GTACGTCCCG GATAACGTGG TCCGGTCTAC TCTCTTGGTT CCCCTTCACT GTATCGTCCT

6231 ACTACTAGTA CCCTTCAGGA ACAATAGGA TGGATGACAA ATAATCCACC TATCCCAGTA GGAGAAATTT
TGATGATCAT GGGAACTCCT TGTTTATCCT ACCTACTGTT TATTAGGTGG ATAGGTCAT CCTCTTTAAA

6301 ATAAAAGATG GATAATCCTG GGATTAAATA AATAGTAAG AATGTATAGC CCTACCAGCA TTCTGGACAT
TATTTTCTAC CTATTAGGAC CCTAATTTAT TTTATCATTC TTACATATCG GGATGGTCCG AAGACCTGTA

6371 AAGACAAGGA CCAAAGAAC CCTTTAGAGA CTATGTAGAC CGTTTCTATA AACTCTAAG AGCCGAGCAA
TTCTGTTCTT GGTTCCTG GGAATCTCT GATACATCTG GCCAAGATAT TTTGAGATTC TCGGCTCGTT

6441 GCTTCACAGG AGTAAAAA TTGGATGACA GAAACCTTGT TGGTCCAAA TCCGAACCCA GATTGTAAGA
CGAAGTGTC TCCATTTTT AACCTACTGT CTTTGAACA ACCAGGTTT ACGCTTGGGT CTAACATTCT

6511 CTATTTTAAA AGCATTGGGA CCAGCGGCTA CACTAGAAGA AATGATGACA GCATGTCAGG GAGTAGGAGG
GATAAAATTT TCGTAACCTT GGTGCGCGAT GTGATCTTCT TTACTACTGT CGTACAGTCC CTCATCCTCC

FIG. 14P

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6581 ACCCGGCCAT AAGGCAAGAG TTTTGGCTGA AGCAATGAGC CAAGTAACAA ATTCAGCTAC CATAATGATG
TGGGCCGGTA TTCCGTCTC AAAACCGACT TCGTTACTCG GTTCATTGTT TAAGTCGATG GTATTACTAC

6651 CAGAGAGGCA ATTTTAGGAA CCAAGAAAG ATTCTTAAGT GTTCAATTG TGGCAAAGAA GGGCACACAG
GTCCTCCGT TAAATCCCTT GCTTCTTTC TAACAATTCA CAAAGTTAAC ACCGTTTCTT CCCGTGTGTC

6721 CCAGAAATTG CAGGGCCCT AGGAAAAGG GCTGTGGAA ATGTGGAAG GAAGGACACC AAATGAAAGA
GGTCTTTAAC GTCCCGGGA TCCTTTTTC CGACAACCTT TACACCTTC CTTCCTGTGG TTTACTTTCT

6791 TTGTACTGAG AGACAGGCTA ATTTTTAGG GAAGATCTGG CCTTCTACA AGGGAAGCC AGGGAATTT
AACATGACTC TCTGTCCGAT TAAAAATCC CTCTAGACC GGAAGGATGT TCCCTTCCG TCCCTTAAAA

6861 CTTCAGAGCA GACCAGAGCC AACAGCCCCA CCAGAAGAGA GCTTCAGGTC TGGGGTAGAG ACAACAATC
GAAGTCTCGT CTGGTCTCGG TTGTCGGGGT GGTCTTCTCT CGAAGTCCAG ACCCATCTC TGTGTTGAG

6931 CCCCTCAGAA GCAGGAGCCG ATAGACAAGG AACTGTATCC TTAACTTCC CTCAGATCAC TCTTTGGCAA
GGGAGTCTT CGTCCTCGG TATCTGTTC TTGACATAGG AATTGAAGG GAGTCTAGTG AGAAACCGTT

FIG. 14Q

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7001 CGACCCCTCG TCACAATAAA GATAGGGGGG CAACTAAAGG AAGCTCTATT AGATACAGGA GCAGATGATA
GCTGGGGAGC AGTGTATT TTCTATCCCCC GTTGATTTC TFCGACATAA TCTATGTCCT CGTCTACTAT

7071 CAGTATTAGA AGAAATGAGT TTGCCAGGAA GATGGAACC AAAAATGATA GGGGGAATTG GAGGTTTTAT
GTCATAATCT TCTTTACTCA AACGGTCCTT CTACCTTTGG TTTTACTAT CCCCCTTAAC CTCCAAAATA

7141 CAAAGTAAGA CAGTATGATC AGATACTCAT AGAAATCTGT GGACATAAAG CTATAGGTAC AGTATTAGTA
GTTTCATTCT GTCATACTAG TCTATGAGTA TCTTTAGACA CCTGTATTTC GATATCCATG TCATAATCAT

7211 GGACCTACAC CTGTCAACAT AATTGGAAGA AATCTGTTGA CTCAGATTGG TTGCACCTTA AATTTTCCCA
CCTGGATGTG GACAGTTGTA TTAACCTTCT TTAGACAACT GAGTCTAACC AACGTGAAAT TTAAAAGGGT

7281 TTAGCCCTAT TGAGACTGTA CCAGTAAAT TAAAGCCAGG AATGGATGGC CCAAAGTTA AACAAATGGCC
AATCGGGATA ACTCTGACAT GGTCATTTTA ATTTCCGTCC TTACCTACCG GCTTTTCAAT TTGTTACCGG

7351 ATTGACAGAA GAAAAATAA AAGCATTAGT AGAAATTGT ACAGAAATGG AAAAGGAAG GAAATTTCA
TAACTGTCTT CTTTTTATT TTCGTAATCA TCTTTAAACA TGCTTTACC TTTTCCTTCC CTTTTAAAGT

FIG. 14R

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7421 AAAATTGGGC CTGAGATCC ATACAATACT CCAGTATTG CCATAAGAA AAAAGACAGT ACTAAATGGA
TTTTAACC CG GACTCTTAGG TATGTTATGA GGTCAATAAC GGTATTCTT TTTTCTGTCA TGATTACCT

7491 GCAAATTAGT AGATTTCAGA GAACTTAATA AGAGAACTCA AGACTTCTGG GAAGTTCAAT TAGGAATACC
CCTTTAATCA TCTAAAGTCT CTTGAATTAT TCTCTTGAGT TCTGAAGACC CTTCAAGTTA ATCCTTATGG

7561 ACATCCCGCA GGGTTAAAA AGAAAAATC AGTAACAGTA CTGGATGTGG GTGATGCATA TTTTTCAGTT
TGTAGGCGGT CCCAATTTT TCTTTTITAG TCATTGTCTAT GACCTACACC CACTACGTAT AAAAAGTCAA

7631 CCCTTAGATG AAGACTTCAG GAAGTATACT GCATTACCA TACCTAGTAT AAACAATGAG ACACCAGGA
GGGAATCTAC TTCTGAAGTC CTTCAATATGA CGTAAATGGT ATGGATCATA TTTGTTACTC TGTGGTCCCT

7701 TTAGATATCA GTACAATGTG CTTCCACAGG GATGGAAGG ATCACCAGCA ATATTCCAA GTAGCATGAC
AATCTATAGT CATGTTACAC GAAGGTGTCC CTACCCTTCC TAGTGGTCCG TATAAGCTT CATCGTACTG

7771 AAAATCTTA GAGCCTTTTA AAAACAAAA TCCAGACATA GTTATCTATC AATACATGAA CGATTGTGTAT
TTTTTAGAAT CTCGGAAAT TTTTGTGTTT AGGTCTGTAT CAATAGATAG TTATGTACTT GCTAAACATA

FIG. 14S

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7841 GTAGGATCTG ACTTAGAAAT AGGGCAGCAT AGAACAAAA TAGAGGAGCT GAGACAACAT CTGTTGAGGT
CATCCTAGAC TGAATCTTTA TCCCGTCGTA TCTTGTTTT ATCTCCCTCGA CTCTGTTGTA GACAACTCCA

7911 GGGGACTTAC CACACCAGAC AAAAAACATC AGAAGAACC TCCATTCCCTT TGGATGGGTT ATGAACCTCCA
CCCCCTGAATG GTGTGGTCTG TTTTTTGTAG TCTTTCTTGG AGGTAAGGAA ACCTACCCAA TACTTGAGGT

7981 TCCTGATAAA TGGACAGTAC AGCCTATAGT GCTGCCAGAA AAAGACAGCT GGA CTGTCAA TGACATACAG
AGGACTATTT ACCTGTCATG TCGGATATCA CGACGGTCTT TTCTGTGCGA CCTGACAGTT ACTGTATGTC

8051 AAGTTAGTGG GGAATTGAA TACCGCAAGT CAGATTTACC CAGGGATTAA AGTAAGGCAA TTATGTAAAC
TTCAATCACC CCTTTAACTT ATGGCGTTCA GTCTAAATGG GTCCCTAATT TCATTCCGTT AATACATTTC

8121 TCCTTAGAGG AACCAAGCA CTAACAGAAG TAATACCACT AACAGAAGAA GCAGAGCTAG AACTGGCAGA
AGGAATCTCC TTGGTTTCGT GATTGTCTTC ATTATGGTGA TTGTCTTCTT CGTCTCGATC TTGACCCGCT

8191 AAACAGAGAG ATTCTAAAG AACCAGTACA TGGAGTGTAT TATGACCCAT CAAAAGACTT AATAGCAGAA
TTTGCTCTCTC TAAGATTTTC TTGGTCATGT ACCTCACATA ATACTGGGTA GTTTTCTGAA TTATCGTCTT

FIG. 147

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8261 ATACAGAAGC AGGGGCAAGG CCAATGGACA TATCAAATTT ATCAAGAGCC ATTTAAAAAT CTGAAAACAG
TATGTCCTTCG TCCCCGTTCC GGTACCTGT ATAGTTTAAA TAGTCTCCG TAAATTTTA GACTTTTCTC

8331 GAAATATGC AAGAATGAGG GGTGCCACACA CTAATGATGT AAACAATTA ACAGAGGCAG TGCAAAAAAT
CTTTTATACG TTCTTACTCC CCACGGGTGT GATTACTACA TTTTGTTAAT TGCTCCCGTC ACGTTTTTTA

8401 AACCACAGAA AGCATAGTAA TATGGGGAAA GACTCCTAAA TTAAACTAC CCATACAAA GGAACATGG
TTGGTGCTT TCGTATCAT ATACCCCTTT CTGAGGATTT AAATTGATG GGTATGTTT CCTTGTACC

8471 GAAACATGGT GGACAGAGTA TTGGCAAGCC ACCTGGATTC CTGAGTGGGA GTTGTTAAT ACCCTCCTT
CTTTGTACCA CCTGTCTCAT AACCGTTCGG TGGACCTAAG GACTCACCTT CAAACAATTA TGGGGAGGAA

8541 TAGTGAAATT ATGGTACCAG TTAGAGAAAG AACCCATAGT AGGAGCAGAA ACCTTCTATG TAGATGGGGC
ATCACTTTAA TACCATGGTC AATCTCTTC TTGGGTATCA TCCTCGTCTT TGGAAGATAC ATCTACCCCG

8611 AGCTAACAGG GAGACTAAAT TAGGAAAAGC AGGATATGTT ACTAACAAG GAAGACAAA GGTGTCTCCC
TCGATTGTCC CTCTGATTA ATCCTTTTCG TCCTATACAA TGATGTGTTT CTTCTGTTT CCAACAGGGG

FIG. 14U

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8681 CTAATAACA CAACAAATCA GAAAACTCAG TTACAAGCAA TTTATCTAGC TTTGCAGGAT TCAGGATTAG
GATTGATTGT GTTGTTTAGT CTTTTCAGTC AATGTTTCGT AAATAGATCG AACGTCCTA AGTCCTAATC

8751 AAGTAAACAT AGTAACAGAC TCACAATATG CATTAGGAAT CATTCAAGCA CAACCAGATA AAAGTGAATC
TTCATTTGTA TCATTGCTG AGTGTATAC GTAATCCTTA GTAAGTTCTG GTTGGTCTAT TTTCACCTTAG

8821 AGAGTTAGTC AATCAAATAA TAGAGCAGTT AATAAAAAG GAAAGGTCT ATCTGGCATG GGTACCAGCA
TCTCAATCAG TTAGTTTATT ATCTCGTCAA TTATTTTTC CTTTCCAGA TAGACCGTAC CCATGGTCTG

8891 CACAAAGGAA TTGGAGGAAA TGAACAAGTA GATAATTAG TCAGTGCTGG AATCAGGAAA ATACTATTTT
GTGTTTCCTT AACCTCCTTT ACTGTTCAT CTATTAAATC AGTCACGACC TTAGTCCTTT TATGATAAAA

8961 TAGATCGAAT AGATAAGGCC CAAGATGAAC ATTAGTTTTT ATGTCGACCT GCAGGGAAG TTTTATAGGT
ATCTACCTTA TCTATTCCGG GTTCTACTTG TAATCAAAA TACAGCTGGA CGTCCCTTTC AAAATATCCA

9031 AGTTGATAGA ACAAATACA TAATTTTGT AATAAATC ACTTTTATA CTAATATGAC ACGATTACCA
TCAACTATCT TGTTTTATGT ATTAACACAT TTTTATTAG TGAAAAATAT GATTATACCTG TGCTAATGGT

FIG. 14V

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9101 ATACTTTTGT TACTAATATC ATTAGTATAC GCTACACCTT TTCCCTCAGAC ATCTAAAAA ATAGGTGATG
TATGAAAAACA ATGATTATAG TAATCATATG CGATGTGGAA AAGGAGTCTG TAGATTTTTF TATCCACTAC

9171 ATGCAACTTT ATCATGTAAT CGAAATAATA CAAATGACTA CGTTGTTATC AGTGCTTGGT ATAAGGAGCC
TACGTTGAAA TAGTACATTA GCTTTATTAT GTTTACTGAT GCAACAATAC TCACGAACCA TATTCCTCGG

9241 CAATTCCATT ATTCTTTTAG CTGCTAAAAG CGACGCTCTG TATTTTGATA ATTATACCAA GGATAAAATA
GTTAAGGTAA TAAGAAAATC GACGATTTTC GCTGCAGAAC ATAAACTAT TAATATGGTT CCTATTTTAT

9311 TCTTACGACT CTCCATACGA TGATCTAGTT ACAACTATCA CAATTAAATC ATTGACTGCT AGAGATGCCG
AGAATGCTGA GAGGTATGCT ACTAGATCAA TGTTGATAGT GTTAATTAG TAACTGACGA TCTCTACGGC

9381 GTACTTATGT ATGTGCATTC TTTATGACAT CGCCTACAAA TGACACTGAT AAAGTAGATT ATGAAGAATA
CATGAATACA TACACGTAAG AAATACTGTA CCGGATGTTT ACTGTGACTA TTTCATCTAA TACTTCTTAT

9451 CTCCACAGAG TTGATTGTAA ATACAGATAG TGAATCGACT ATAGACATAA TACTATCTGG ATCTACACAT
GAGGTGCTC AACTAACATT TATGTCTATC ACTTAGCTGA TATCTGTATT ATGATAGACC TAGATGTGTA

FIG. 14W

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9521 TCACCAGAAA CTAGTTAAGC TTGTCTCCCT ATAGTGAGTC GTATTAGAGC TTGGCCGTAAT CATGGTCATA
AGTGGTCTTT GATCAATTCTG AACAGAGGGA TATCACTCAG CATAATCTCG AACGCATTA GTACCAGTAT

9591 GCTGTTTCCT GTGTGAAATT GTTATCCGCT CACAATTCCA CACAACATAC GAGCCGGAAG CATAAAGTGT
CGACAAAGGA CACACTTTAA CAATAGCGGA GTGTTAAGGT GTGTTGTATG CTCGGCCTTC GTATTTCACA

9661 AAAGCCTGGG GTGCCCTAATG AGTGAGCTAA CTCACATTAA TTGCGTTGCG CTCACTGCCC GCTTTCGAGT
TTTCGGACCC CACGGATTAC TCACTCGATT GAGTGTAATT AACGCAACGC GAGTGACGGG CGAAAGCTCA

9731 CCGGAAACCT GTCGTGCCAG CTCATTAAAT GAATCGGCCA ACGCGCGGG AGAGCGGTT TGCGTATTGG
GCCCCTTTGGA CAGCACGGTC GACGTAATTA CTAGCCGGT TCGCGGCCCC TCTCCGCCAA ACGCATAACC

9801 GCGCTCTTCC GCTTCCTCGC TCACTGACTC GCTGCGCTCG GTCGTTCGGC TGCGGCGAGC GGTATCAGCT
CGCGAGAAGG CGAAGGAGCG AGTGACTGAG CGACGCGAGC CAGCAAGCCG ACGCGCTCG CCATAGTCGA

9871 CACTCAAAGG CCGTAATACG GTTATCCACA GAATCAGGGG ATAACGCAGG AAAGAACATG TGAGCAAAG
GTGAGTTTCC GCCATTATGC CAATAGGTGT CTAGTCCCC TATTGCGTCC TTTCTTGAC ACTCGTTTC

9941 GCCAGCAAAA GGCCAGGAAC CGTAAAAGG CCGCGTTTTC GATAGGCTCC GCGCCCCCTGA
CGGTCGTTTT CCGGTCCTTG GCATTTTTCC GCGCAACGA CTATCCGAGG CCGGGGGACT

FIG. 14X

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10011 CGAGCATCAC AAAATCGAC GCTCAAGTCA GAGGTGGCGA AACCCGACAG GACTATAAAG ATACCAGGCG
      GCTCGTAGTG TTTTITAGCTG CGAGTTCAGT CTCCACCGCT TTGGGCTGTC CTGATATTTC TATGGTCCGC

10081 TTTCCCCCTG GAAGCTCCCT CGTGCGCTCT CCTGTTCGA CCTGCCGCT TACCGGATAC CTGTCCGCCCT
      AAAGGGGAC CTTGAGGGA GCACGGGAGA GGACAAGGCT GGGACGGCGA ATGGCCTATG GACAGGCGGA

10151 TTCTCCCTTC GGAAGCGTG GCGCTTTCTC ATAGCTCAG CTGTAGGTAT CTCAGTTCGG TGTAGGTCGT
      AAGAGGGAAG CCTTTCGCAC CGGAAAGAG TATCGAGTGC GACATCCATA GAGTCAAGCC ACATCCAGCA

10221 TCGCTCCAAG CTGGGCTGTG TGCACGAACC CCCCCTTCAG CCCGACCGCT GCGCCTTATC CCGTAACTAT
      AGCGAGGCTC GACCCGACAC ACGTGCTTGG GGGGCAAGTC GGGCTGGCGA CGCGGAATAG GCCATTGATA

10291 CGTCTTGAGT CCAACCCGGT AAGACACGAC TTATCGCCAC TGGCAGCAGC CACTGGTAAC AGGATTAGCA
      GCAGAACTCA GGTGGGCCA TTCTGTGCTG AATAGCGGTG ACCGTCGTCG GTGACCATTC TCCTAATCGT

10361 GAGCGAGGTA TGAGGCGGT GCTACAGAGT TCTTGAAGTG GTGGCCCTAAC TACGGCTACA CTAGAAGGAC
      CTCGCTCCAT ACATCCGCCA CGATGTCTCA AGAACTTCAC CACCGGATTG ATGCCGATGT GATCTTCCTG

10431 AGTATTTGGT ATCTGCGCTC TGCTGAAGCC AGTTACCTTC GGAAAAAGAG TTGGTAGCTC TTGATCCGGC
      TCATAAACCA TAGACGGAG ACGACTTCGG TCAATGGAAG CCTTTTCTC AACCATCGAG AACTAGGCCG
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FIG. 14Y

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10501 AAACAACCA CCGCTGCTAG CCGTGCTTTT TTTGTTTGCA AGCAGCAGAT TACCGGCAGA AAAAAGGAT
TTTGTTTGCT GCGGACCATC GCCACC AAAA AACAAACGT TCGTCGTCTA ATGCGCGTCT TTTTTCCTA

10571 CTCAAGAAGA TCCTTTGATC TTTTCTACGG GGCTGACGC TCAGTGGAAC GAAACTCAC GTTAAGGGAT
GAGTCTTCT AGGAAACTAG AAAAGATGCC CCAGACTGG AGTCACCTTG CTTTTCAGTG CAATTCCTA

10641 TTTGGTCATG AGATTATCAA AAAGGATCTT CACCTAGATC CTTTAAATT AAAATGAAG TTTTAAATCA
AAACCAGTAC TCTAATAGTT TTTCCTAGAA GTGGATCTAG GAAATTTAA TTTTACTTC AAAATTAGT

10711 ATCTAAAGTA TATATGAGTA AACTTGGTCT GACAGTTACC AATGCTTAAT CAGTGAGGCA CCTATCTCAG
TAGATTTTCAT ATATACTCAT TTGAACCCAGA CTGTCAATGG TTACGAATTA GTCACTCCGT GGATAGAGTC

10781 CGATCTGTCT ATTTCTGTCA TCCATAGTTG CCTGACTCCC CGTCGTGTAG ATAACACGA TACGGGAGGG
GCTAGACAGA TAAAGCAAGT AGGTATCAAC GGA CTGAGGG GCAGCACATC TATTGATGCT ATGCCCTCCC

10851 CTTACCATCT GGCCCCAGTG CTGCAATGAT ACCGCGAGAC CCACGCTCAC CGGCTCCAGA TTTATCAGCA
GAATGGTAGA CCGGGGTAC GACCTTACTA TGGCGCTCTG GGTGCGAGTG GCCGAGGTCT AAATAGTCGT

10921 ATAAACCAGC CAGCCGGAAG GGCCGAGCGC AGAAGTGGTC CTGCAACTTT ATCCGCCCTCC ATCCAGTCTA
TATTGGTCG GTCGGCCCTC CCGGCTCGG TCTTACCAG GACGTTGAAA TAGCGGAGG TAGGTCAGAT

FIG. 14Z

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10991 TTAATTGTTG CCGGGAAGCT AGAGTAAGTA GTTCGCCAGT TAATAGTTG CGCAACGTTG TTGGCATTGC
AATTAAACAAC GCCCCTTCGA TCTCATTCAT CAAGCGGTCA ATTATCAAAC GCGTTGCAAC AACCGTAACG

11061 TACAGGCATC GTGGTGTAC GCTCGTCGTT TGGTATGGCT TCATTCAGCT CCGGTTCCCA ACGATCAAGG
ATGTCCGTAG CACCACAGTG CGAGCAGCAA ACCATACCGA AGTAAGTCCA GGCCAAGGCT TGCTAGTTCC

11131 CGAGTTACAT GATCCCCCAT GTTGTCAAA AAAGCGGTA GCTCCTTCGG TCCTCCGATC GTTGTCAAGAA
GCTCAATGTA CTAGGGGGTA CAACACGTTT TTTCGCCAAT CGAGGAAGCC AGGAGGCTAG CAACAGTCTT

11201 GTAAGTTGGC CGCAGTGTTA TCACTCATGG TTATGGCAGC ACTGCATAAT TCTCTTACTG TCATGCCATC
CATCAACCG GCGTCACAAT AGTGAGTACC AATACCGTCG TGACGTATTA AGAGAATGAC AGTACGGTAG

11271 CGTAAGATGC TTTTCTGTGA CTGGTCAGTA CTCAACCAAG TCATTCTGAG AATAGTGAT CGCGCGACCG
GCATTCTACG AAAAGACACT GACCACTCAT GAGTTGGTTC AGTAAGACTC TTATCACATA CGCCGCTGGC

11341 AGTTGCTCTT GCGCGCGCTC AATACGGGAT AATACCGCGC CACATAGCAG AACTTTAAAA GTGCTCATCA
TCAACGAGAA CCGCGCGCAG TTATGCCCTA TTATGGCGCG GTGTATCGTC TTGAAATTTT CACGAGTAGT

FIG. 14AA

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11411 TTGGAAAACG TTCTTCGGGG CGAAACTCT CAAGATCTT ACCGCTGTTG AGATCCAGTT CGATGTAACC
AACCTTTTGC AAGAAGCCCC GCTTTTGAGA GTTCCTAGAA TGGCGACAAC TCTAGGTCAA GCTACATTCG
=====
11481 CACTCGTGCA CCCAACTGAT CTTCAGCATC TTTTACTTTC ACCAGCGTTT CTGGGTGAGC AAAAACAGGA
GTGAGCACCT GGGTTGACTA GAAGTCGTAG AAAATGAAAG TGGTCGCAAA GACCCACTCG TTTTGTCTCT
=====
11551 AGGCAAAATG CCGCAAAAAA GGGAATAAGG GCGACACGGA AATGTTGAAT ACTCATACTC TTCCTTTTTC
TCCGTTTAC GCGGTTTTT CCCTTATTCC CGCTGTGCC TACAACTTA TCAGTATGAG AAGGAAAAAG
=====
11621 AATATTATTG AAGCATTTAT CAGGGTTATT GTCTCATGAG CGGATACATA TTTGAATGTA TTTAGAAAAA
TTATAATAAC TTCGTAAATA GTCCCAATAA CAGAGTACTC GCCTATGTAT AAACCTTACAT AAATCTTTT
=====
11691 TAAACAAATA GGGTTCCGC GCACATTTC CCGAAAAGTG CCACCTGACG TCTAAGAAAC CATTATTATC
ATTGTATTAT CCCCAGGCG CGTGAAAGG GCCTTTTCAC GGTGGACTGC AGATTCTTTG GTAATAATAG
=====
11761 ATGACATTAA CCTATAAAA TAGCGTATC ACCAGGCCCT TTCGTCTCCG CCGTTTCGGT GATGACGGTG
TACTGTAATT GGATATTTT ATCCGCATAG TGCTCCGGGA AAGCAGAGCG CGCAAAGCCA CTACTGCCAC
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FIG. 14AB

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11831 AAAACCTCTG ACACATGCAG CTCCTGGAGA CCGTCACAGC TTGTCTGTAA GCGGATGCCG GGAGCAGACA
      TTTTGGAGAC TGTGTACGTC GAGGGCCTCT GCCAGTGTGG AACAGACATT CGCTACGGC CCTCGTCTGT

11901 AGCCCCTCAG GCGCGCTCAG CCGGTGTTGG CCGGTGTCGG GGCTGGCTTA ACTATGCCGG ATCAGAGCAG
      TCGGGCAGTC CCGCGCAGTC GCCCACAAAC GCCCACAGCC CCGACCGAAT TGATACGGCG TAGTCTCGTC

11971 ATTGTAAGA GAGTGACCA TATGCGGTGT GAAATACCG ACAGATGCGT AAGGAGAAA TACCGCATCA
      TAACATGACT CTCACGTGGT ATACGCCACA CTTTATGGCG TGCTACGCA TTCCTCTTTT ATGGCGTAGT

12041 GCGGCCATTG CCATTTCAGG CTGCGCAACT GTTGGGAAGG GCGATCGGTG CCGGCCCTCT CGCTATTACG
      CCGCGGTAAG CCGTAAGTCC GACGCGTTGA CAACCCCTTC CGCTAGCCAC GCCCGGAGAA GCGATAATGC

12111 CCAGCTGGCG AAAGGGGAT GTGCTGCAAG GCGATTAAAT TGGGTAACGC CAGGGTTTTC CCAGTCACGA
      GGTCCGACCGC TTTCCCCCTA CACGACGTTT CGCTAATTCA ACCCATTTGG GTCCCAAAG GGTCAAGTGT

12181 CGTTGTAAA CGACGGCCAG TGAATTGGAT TTAGGTGACA CTATA
      GCAACATTTT GCTGCCGGTC ACTTAACCTA AATCCACTGT GATAT
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FIG. 14AC

**Text File of pLW-48 and the Included Individual HIV Genes and Their
Promoters**

Entire pLW-48 plasmid sequence:

GAATTCGTTGGTGGTCGCCATGGATGGTGTATTGTATACTGTCTAAACGCG
TTAGTAAAACATGGCGAGGAAATAAATCATATAAAAAATGATTTTCATGATTAA
ACCATGTTGTGAAAAAGTCAAGAACGTTACATTGGCGGACAATCTAAAAAC
AATACAGTGATTGCAGATTTGCCATATATGGATAATGCGGTATCCGATGTAT
GCAATTCAGTGTATAAAAAGAATGTATCAAGAATATCCAGATTTGCTAATTTG
ATAAAGATAGATGACGATGACAAGACTCCTACTGGTGTATATAATTATTTTAA
ACCTAAAGATGCCATTCCTGTTATTATATCCATAGGAAAGGATAGAGATGTTT
GTGAACTATTAATCTCATCTGATAAAGCGTGTGCGTGTATAGAGTTAAATTCA
TATAAAGTAGCCATTCTTCCCATGGATGTTTCCTTTTTTACCAAAGGAAATGC
ATCATTGATTATTCTCCTGTTTGATTCTCTATCGATGCGGCACCTCTCTTAA
GAAGTGTAACCGATAATAATGTTATTATATCTAGACACCAGCGTCTACATGA
CGAGCTTCCGAGTTCCAATTGGTTCAAGTTTTACATAAGTATAAAGTCCGAC
TATTGTTCTATATTATATATGGTTGTTGATGGATCTGTGATGCAATAGC
TGATAATAGAACTTACGCAAATATTAGCAAAAATATATTAGACAATACTACAA
TTAACGATGAGTGTAGATGCTGTTATTTTGAACCACAGATTAGGATTCTTGAT
AGAGATGAGATGCTCAATGGATCATCGTGTGATATGAACAGACATTGTATTA
TGATGAATTTACCTGATGTAGGCGAATTTGGATCTAGTATGTTGGGGAAATA
TGAACCTGACATGATTAAGATTGCTCTTTCCGTGGCTGGGTACCAGGCGCG
CCTTTCATTTTGTTTTTTTCTATGCTATAAATGGTACGTCCTGTAGAAACCCC
AACCCGTGAAATCAAAAAACTCGACGGCCTGTGGGCATTCAAGTCTGGATCG
CGAAACTGTGGAATTGATCAGCGTTGGTGGGAAAGCGCGTTACAAGAAAG
CCGGGCAATTGCTGTGCCAGGCAGTTTTTAACGATCAGTTCGCCGATGCAGA
TATTCGTAATTATGCGGGCAACGTCTGGTATCAGCGCGAAGTCTTTATACCG
AAAGGTTGGGCAGGCCAGCGTATCGTGCTGCGTTTTCGATGCGGTCACTCAT
TACGGCAAAGTGTGGGTCAATAATCAGGAAGTGATGGAGCATCAGGGCGG
CTATACGCCATTTGAAGCCGATGTCACGCCGTATGTTATTGCCGGGAAAAG
TGACGTATCACCGTTTGTGTGAACAACGAACTGAACTGGCAGACTATCCC
GCCGGGAATGGTGATTACCGACGAAAACGGCAAGAAAAAGCAGTCTTACTT
CCATGATTTCTTTAACTATGCCGGAATCCATCGCAGCGTAATGCTCTACACC
ACGCCGAACACCTGGGTGGACGATATCACCGTGGTGACGCATGTCGCGCA
AGACTGTAACCACGCGTCTGTTGACTGGCAGGTGGTGGCCAATGGTGATGT
CAGCGTTGAACTGCGTGATGCGGATCAACAGGTGGTTGCAACTGGACAAG
GCACTAGCGGGACTTTGCAAGTGGTGAATCCGCACCTCTGGCAACCGGGT
GAAGGTTATCTCTATGAACTGTGCGTCACAGCCAAAAGCCAGACAGAGTGT
GATATCTACCCGCTTCGCGTCGGCATCCGGTCAGTGGCAGTGAAGGGCGA
ACAGTTCCTGATTAACCACAAACCGTTCTACTTTACTGGCTTTGGTCGTCAT
GAAGATGCGGACTTGCGTGGCAAAGGATTGATAACGTGCTGATGGTGCAC
GACCACGCATTAATGGACTGGATTGGGGCCAACTCCTACCGTACCTCGCAT
TACCCTTACGCTGAAGAGATGCTCGACTGGGCAGATGAACATGGCATCGTG

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GTGATTGATGAAACTGCTGCTGTCGGCTTTAACCTCTCTTTAGGCATTGGTT
TCGAAGCGGGCAACAAGCCGAAAGAACTGTACAGCGAAGAGGCAGTCAAC
GGGGAAACTCAGCAAGCGCACTTACAGGCGATTAAAGAGCTGATAGCGCGT
GACAAAACCAACCAAGCGTGGTGTGTGGAGTATTGCCAACGAACCGGAT
ACCCGTCCGCAAGGTGCACGGGAATATTTTCGCGCCACTGGCGGAAGCAAC
GCGTAAACTCGACCCGACGCGTCCGATCACCTGCGTCAATGTAATGTTCTG
CGACGCTCACACCGATAACCATCAGCGATCTCTTTGATGTGCTGTGCCTGAA
CCGTTATTACGGATGGTATGTCCAAAGCGGCGATTTGGAAACGGCAGAGAA
GGTACTGGAAAAAGAACTTCTGGCCTGGCAGGAGAACTGCATCAGCCGAT
TATCATCACCGAATACGGCGTGGATACGTTAGCCGGGCTGCACTCAATGTA
CACCGACATGTGGAGTGAAGAGTATCAGTGTGCATGGCTGGATATGTATCA
CCGCGTCTTTGATCGCGTCAGCGCCGTCGTCGGTGAACAGGTATGGAATTT
CGCCGATTTTGCGACCTCGCAAGGCATATTGCGCGTTGGCGGTAAACAAGAA
AGGGATCTTCACTCGCGACCGCAAACCGAAGTCGGCGGCTTTTCTGCTGCA
AAAACGCTGGACTGGCATGAACTTCGGTGAAAAACCGCAGCAGGGAGGCA
AACAAATGAGAGCTCGGTTGTTGATGGATCTGTGATGCATGCAATAGCTGATA
ATAGAACTTACGCAAATATTAGCAAAAATATATTAGACAATACTACAATTAAC
GATGAGTGTAGATGCTGTTATTTTGAACCACAGATTAGGATTCTTGATAGAG
ATGAGATGCTCAATGGATCATCGTGTGATATGAACAGACATTGTATTATGAT
GAATTTACCTGATGTAGGCGAATTTGGATCTAGTATGTTGGGGAAATATGAA
CCTGACATGATTAAGATTGCTCTTTCGGTGGCTGGCGGCCCCGCTCGAGTAA
AAAATGAAAAAATATTCTAATTTATAGGACGGTTTTGATTTTCTTTTTTCTAT
GCTATAAATAATAAATAGCGGCCGCACCATGAAAGTGAAGGGGATCAGGAA
GAATTATCAGCACTTGTGGAAATGGGGCATCATGCTCCTTGGGATGTTGATG
ATCTGTAGTGCTGTAGAAAATTTGTGGGTACAGTTTATTATGGGGTACCTG
TGTGGAAAGAAGCAACCACCACTCTATTTTGTGCATCAGATGCTAAAGCATA
TGATACAGAGGTACATAATGTTTGGGCCACACATGCCTGTGTACCCACAGA
CCCCAACCCACAAGAAGTAGTATTGGAAAATGTGACAGAAAATTTTAACATG
TGGAAAAATAACATGGTAGAACAGATGCATGAGGATATAATCAGTTTATGGG
ATCAAAGCCTAAAGCCATGTGTAAAATTAACCCCACTCTGTGTTACTTTAAAT
TGCACTGATTTGAGGAATGTTACTAATATCAATAATAGTAGTGAGGGAATGA
GAGGAGAAATAAAAAACTGCTCTTCAATATCACCACAAGCATAAGAGATAA
GGTGAAGAAAGACTATGCACTTTTCTATAGACTTGATGTAGTACCAATAGATA
ATGATAATACTAGCTATAGGTTGATAAATTGTAATACCTCAACCATTACACAG
GCCTGTCCAAAGGTATCCTTTGAGCCAATTCCCATACATTATTGTACCCCGG
CTGGTTTTGCGATTCTAAAGTGTAAGACAAGAAGTTCAATGGAACAGGGCC
ATGTAAAAATGTCAGCACAGTACAATGTACACATGGAATTAGGCCAGTAGTG
TCAACTCAACTGCTGTTAAATGGCAGTCTAGCAGAAGAAGAGGTAGTAATTA
GATCTAGTAATTTACAGACAATGCAAAAAACATAATAGTACAGTTGAAAGAA
TCTGTAGAAATTAATTGTACAAGACCCAACAACAATACAAGGAAAAGTATAC
ATATAGGACCAGGAAGAGCATTTTATACAACAGGAGAAATAATAGGAGATAT
AAGACAAGCACATTGCAACATTAGTAGAACAAAATGGAATAACACTTTAAAT
CAAATAGCTACAAAATTAAGAACAATTTGGGAATAATAAAACAATAGTCTT
TAATCAATCCTCAGGAGGGGACCCAGAAATTGTAATGCACAGTTTTAATTGT
GGAGGGGAATTCTTCTACTGTAATTCACACAACCTGTTTAATAGTACTTGA
ATTTAATGGTACTTGGAATTAACACAATCGAATGGTACTGAAGGAAATGA

FIG. 15B

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CACTATCACACTCCCATGTAGAATAAAACAAATTATAAATATGTGGCAGGAA
GTAGGAAAAGCAATGTATGCCCTCCCATCAGAGGACAAATTAGATGCTCAT
CAAATATTACAGGGCTAATATTAACAAGAGATGGTGGAACTAACAGTAGTGG
GTCCGAGATCTTCAGACCTGGGGGAGGAGATATGAGGGACAATTGGAGAA
GTGAATTATATAAATATAAAGTAGTAAAAATTGAACCATTAGGAGTAGCACC
ACCAAGGCCAAAAAGAAGAGTGGTGCAGAGAGAAAAAAGAGCAGTGGGAAC
GATAGGAGCTATGTTCTTGGGTTCTTGGGAGCAGCAGGAAGCACTATGGG
CGCAGCGTCAATAACGCTGACGGTACAGGCCAGACTATTATTGTCTGGTAT
AGTGCAACAGCAGAACAAATTTGCTGAGGGCTATTGAGGCGCAACAGCATCT
GTTGCAACTCACAGTCTGGGGCATCAAGCAGCTCCAGGCAAGAGTCCTGG
CTGTGGAAAGATACCTAAGGGATCAACAGCTCCTAGGGATTTGGGGTTGCT
CTGGAAAACCTCATCTGCACCACTGCTGTGCCTTGGAAATGCTAGTTGGAGTA
ATAAACTCTGGATATGATTTGGGATAACATGACCTGGATGGAGTGGGAAA
GAGAAATCGAAAATTACACAGGCTTAATATACACCTTAATTGAGGAATCGCA
GAACCAACAAGAAAAGAATGAACAAGACTTATTAGCATTAGATAAGTGGGCA
AGTTTGTGGAATTGGTTTGACATATCAAATTGGCTGTGGTATGTAAAAATCTT
CATAATGATAGTAGGAGGCTTGATAGGTTTAAGAATAGTTTTTACTGTACTTT
CTATAGTAAATAGAGTTAGGCAGGGATACTCACCATTGTCATTTACAGACCCA
CCTCCCAGCCCCGAGGGGACCCGACAGGCCCGAAGGAATCGAAGAAGAAG
GTGGAGACAGAGACTAATTTTTATGCGGCCGCTGGTACCCAACCTAAAAATT
GAAAATAAATACAAAGGTTCTTGAGGGTTGTGTTAAATTGAAAGCGAGAAAT
AATCATAAATAAGCCCGGGGATCCTCTAGAGTCGACACCATGGGTGCGAGA
GCGTCAGTATTAAGCGGGGGGAGAATTAGATCGATGGGAAAAAATTCGGTTA
AGGCCAGGGGGGAAAGAAAAAATATAAATTAACATATAGTATGGGCAAGCA
GGGAGCTAGAACGATTGCGAGTTAATCCTGGCCTGTTAGAAACATCAGAAG
GCTGTAGACAAATACTGGGACAGCTACAACCATCCCTTCAGACAGGATCAG
AAGAACTTAGATCATTATATAATACAGTAGCAACCCTCTATTGTGTGCATCAA
AGGATAGAGATAAAAGACACCAAGGAAGCTTTAGACAAGATAGAGGAAGAG
CAAAACAAAAGTAAGAAAAAAGCACAGCAAGCAGCAGCTGACACAGGACAC
AGCAATCAGGTCAGCCAAAATTACCCTATAGTGCAGAACATCCAGGGGCAA
ATGGTACATCAGGCCATATCACCTAGAACTTTAAATGCATGGGTAAAAGTAG
TAGAAGAGAAGGCTTTCAGCCCAGAAGTGATACCCATGTTTTTCAGCATTATC
AGAAGGAGCCACCCCAAGATTTAAACACCATGCTAAACACAGTGGGGGG
ACATCAAGCAGCCATGCAAATGTTAAAAGAGACCATCAATGAGGAAGCTGC
AGAATGGGATAGAGTGCATCCAGTGCATGCAGGGCCTATTGCACCAGGCCA
GATGAGAGAACCAAGGGGAAGTGACATAGCAGGAACTACTAGTACCCTTCA
GGAACAAATAGGATGGATGACAAATAATCCACCTATCCCAGTAGGAGAAATT
TATAAAAGATGGATAATCCTGGGATTAATAAATAGTAAGAATGTATAGCCC
TACCAGCATTCTGGACATAAGACAAGGACCAAAAGAACCCTTTAGAGACTAT
GTAGACCGGTTCTATAAACTCTAAGAGCCGAGCAAGCTTCACAGGAGGTA
AAAAATTGGATGACAGAAACCTTGTTGGTCCAAAATGCGAACCCAGATTGTA
AGACTATTTTAAAAGCATTGGGACCAGCGGCTACACTAGAAGAAATGATGAC
AGCATGTCAGGGAGTAGGAGGACCCGGCCATAAGGCAAGAGTTTTGGCTG
AAGCAATGAGCCAAGTAACAAATTCAGCTACCATAATGATGCAGAGAGGCA
ATTTTAGGAACCAAGAAAGATTGTTAAGTGTTTCAATTGTGGCAAAGAAGG
GCACACAGCCAGAAATTGCAGGGCCCCTAGGAAAAAGGGCTGTTGGAAAT

FIG. 15C

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GTGGAAAGGAAGGACACCAAATGAAAGATTGTACTGAGAGACAGGCTAATT
TTTTAGGGAAGATCTGGCCTTCCTACAAGGGAAGGCCAGGGAATTTTCTTCA
GAGCAGACCAGAGCCAACAGCCCCACCAGAAGAGAGCTTCAGGTCTGGGG
TAGAGACAACAACCTCCCCCTCAGAAGCAGGAGCCGATAGACAAGGAACTGT
ATCCTTTAACTTCCCTCAGATCACTCTTTGGCAACGACCCCTCGTCACAATA
AAGATAGGGGGGGCAACTAAAGGAAGCTCTATTAGATACAGGAGCAGATGAT
ACAGTATTAGAAGAAATGAGTTTGCCAGGAAGATGGAAACCAAAAATGATAG
GGGGAATTGGAGGTTTTATCAAAGTAAGACAGTATGATCAGATACTCATAGA
AATCTGTGGACATAAAGCTATAGGTACAGTATTAGTAGGACCTACACCTGTC
AACATAATTGGAAGAAATCTGTTGACTCAGATTGGTTGCACTTTAAATTTTCC
CATTAGCCCTATTGAGACTGTACCAGTAAAATTAAAGCCAGGAATGGATGGC
CCAAAAGTTAAACAATGGCCATTGACAGAAGAAAAAATAAAAGCATTAGTAG
AAATTTGTACAGAAATGGAAAAGGAAGGGGAAAATTTCAAAAATTGGGCCTGA
GAATCCATACAATACTCCAGTATTTGCCATAAAGAAAAAAGACAGTACTAAAT
GGAGGAAATTAGTAGATTTTCAGAGAACTTAATAAGAGAACTCAAGACTTCTG
GGAAGTTCAATTAGGAATACCACATCCCGCAGGGTTAAAAAAGAAAAAATCA
GTAACAGTACTGGATGTGGGTGATGCATATTTTTCAGTTCCCTTAGATGAAG
ACTTCAGGAAGTATACTGCATTTACCATACCTAGTATAAACAATGAGACACC
AGGGATTAGATATCAGTACAATGTGCTTCCACAGGGATGGAAAGGATCACC
AGCAATATTCCAAAGTAGCATGACAAAAATCTTAGAGCCTTTTAAAAAACAAA
ATCCAGACATAGTTATCTATCAATACATGAACGATTTGTATGTAGGATCTGAC
TTAGAAATAGGGGCAGCATAGAACAAAAATAGAGGAGCTGAGACAACATCTG
TTGAGGTGGGGACTTACCACACCAGACAAAAAACATCAGAAAGAACCTCCA
TTCCTTTGGATGGGTTATGAACTCCATCCTGATAAATGGACAGTACAGCCTA
TAGTGCTGCCAGAAAAAGACAGCTGGACTGTCAATGACATACAGAAGTTAG
TGGGGAAATTGAATACCGCAAGTCAGATTTACCCAGGGATTAAAGTAAGGC
AATTATGTAACTCCTTAGAGGAACCAAAGCACTAACAGAAGTAATACCACT
AACAGAAGAAGCAGAGCTAGAACTGGCAGAAAACAGAGAGATTCTAAAAGA
ACCAGTACATGGAGTGTATTATGACCCATCAAAGACTTAATAGCAGAAATA
CAGAAGCAGGGGGCAAGGCCAATGGACATATCAAATTTATCAAGAGCCATTT
AAAAATCTGAAAACAGGAAAAATATGCAAGAATGAGGGGTGCCCACACTAAT
GATGTAAAACAATTAACAGAGGCGAGTGCAAAAAATAACCACAGAAAGCATAG
TAATATGGGGAAAGACTCCTAAATTTAACTACCCATACAAAAGGAAACATG
GGAAACATGGTGGACAGAGTATTGGCAAGCCACCTGGATTCCTGAGTGGGA
GTTTGTTAATACCCCTCCTTTAGTGAAATTATGGTACCAGTTAGAGAAAGAA
CCCATAGTAGGAGCAGAAACCTTCTATGTAGATGGGGCAGCTAACAGGGAG
ACTAAATTAGGAAAAGCAGGATATGTTACTAACAAAGGAAGACAAAAGGTTG
TCCCCCTAACTAACACAACAAATCAGAAAACCTCAGTTACAAGCAATTTATCTA
GCTTTGCAGGATTCAGGATTAGAAGTAAACATAGTAACAGACTCACAATATG
CATTAGGAATCATTCAAGCACAACCAGATAAAAGTGAATCAGAGTTAGTCAA
TCAAATAATAGAGCAGTTAATAAAAAAGGAAAAGGTCTATCTGGCATGGGTA
CCAGCACACAAAGGAATTGGAGGAAATGAACAAGTAGATAAATTAGTCAGT
GCTGGAATCAGGAAAATACTATTTTATAGATGGAATAGATAAGGCCCAAGATG
AACATTAGTTTTTATGTCGACCTGCAGGGGAAAGTTTTATAGGTAGTTGATAG
AACAAAATACATAATTTTGTAAAAATAAATCACTTTTTATACTAATATGACACG
ATTACCAATACTTTTGTTACTAATATCATTAGTATACGCTACACCTTTTCCTCA

FIG. 15D

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GACATCTAAAAAATAGGTGATGATGCAACTTTATCATGTAATCGAAATAATA
CAAATGACTACGTTGTTATGAGTGCTTGGTATAAGGAGCCCAATTCCATTAT
TCTTTTAGCTGCTAAAAGCGACGTCTTGTATTTTGATAATTATACCAAGGATA
AAATATCTTACGACTCTCCATACGATGATCTAGTTACAACATCACAATTA
TCATTGACTGCTAGAGATGCCGGTACTTATGTATGTGCATTCTTTATGACATC
GCCTACAAATGACACTGATAAAGTAGATTATGAAGAATACTCCACAGAGTTG
ATTGTAAATACAGATAGTGAATCGACTATAGACATAATACTATCTGGATCTAC
ACATTCACCAGAACTAGTTAAGCTTGTCTCCCTATAGTGAGTCGTATTAGA
GCTTGGCGTAATCATGGTCATAGCTGTTTCCTGTGTGAAATTGTTATCCGCT
CACAATTCCACACAACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGG
TGCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCCGCT
TTCGAGTCGGGAAACCTGTCGTGCCAGCTGCATTAATGAATCGGCCAACGC
GCGGGGAGAGGCGGTTTGCCTATTGGGCGCTCTTCCGCTTCCTCGCTCAC
TGA CTGCTGCGCTCGGTCTGTCGTCGGCTGCGGCGAGCGGTATCAGCTCACT
CAAAGGCGGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAAGA
ACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCG
TTGCTGGCGTTTTTCGATAGGCTCCGCCCCCTGACGAGCATCACAAAAT
CGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAG
GCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCCTGCCG
CTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCT
CATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTGCTTCGCTCCAAG
CTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGCTGCGCCTTATC
CGGTA ACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACT
GGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTG
CTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGGACAG
TATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGG
TAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGT
TGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTG
ATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACCTCACGTTAAGGG
ATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAAATTA
AAAATGAAGTTTTAAATCAATCTAAAGTATATATGAGTAACTTGGTCTGACA
GTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTG
TTCATCCATAGTTGCCTGACTCCCCGTCGTGTAGATAACTACGATACGGGAG
GGCTTACCATCTGGCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTCA
CCGGCTCCAGATTTATCAGCAATAAACCAGCCAGCCGGAAGGGCCGAGCG
CAGAAGTGGTCCTGCAACTTTATCCGCCTCCATCCAGTCTATTAATTGTTGC
CGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGCGCAACGTTGTT
GGCATTGCTACAGGCATCGTGGTGTACGCTCGTCTGTTTGGTATGGCTTCA
TTCAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGT
GCAAAAAAGCGGTTAGCTCCTTCGGTCCTCCGATCGTTGTCAGAAGTAAGT
TGGCCGCAGTGTTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTAC
TGTCATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAG
TCATTCTGAGAATAGTGTATGCGGCGACCGAGTTGCTCTTGCCCGGCGTCA
ATACGGGATAATACCGCGCCACATAGCAGAACTTTAAAAGTGCTCATCATTG
GAAAACGTTCTTCGGGGCGAAAACCTCTCAAGGATCTTACCGCTGTTGAGAT
CCAGTTCGATGTAACCCACTCGTGCACCCA ACTGATCTTCAGCATCTTTTAC

FIG. 15E

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TTTCACCAGCGTTTCTGGGTGAGCAAAACAGGAAGGCAAAATGCCGCAAA
AAAGGGAATAAGGGGCGACACGGAAATGTTGAATACTCATACTCTTCCTTTT
CAATATTATTGAAGCATTATCAGGGTTATTGTCTCATGAGCGGATACATATT
TGAATGTATTTAGAAAAATAAACAAATAGGGGTTCCGCGCACATTTCCCGA
AAAGTGCCACCTGACGTCTAAGAAACCATTATTATCATGACATTAACTATAA
AATAGGCGTATCACGAGGCCCTTTCGTCTCGCGCGTTTCGGTGATGACGG
TGAAAACCTCTGACACATGCAGCTCCCGGAGACGGTCACAGCTTGTCTGTA
AGCGGATGCCGGGAGCAGACAAGCCCGTCAGGGCGCGTCAGCGGGTGTT
GGCGGGTGTCGGGGCTGGCTTAACCTATGCGGCATCAGAGCAGATTGTACT
GAGAGTGCACCATATGCGGTGTGAAATACCGCACAGATGCGTAAGGAGAAA
ATACCGCATCAGGCGCCATTTCGCCATTTCAGGCTGCGCAACTGTTGGGAAGG
GCGATCGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGGAT
GTGCTGCAAGGCGATTAAGTTGGGTAAACGCCAGGGTTTTCCAGTCACGAC
GTTGTAAAACGACGGCCAGTGAATTGGATTAGGTGACACTATA

New Psyn II Promoter which controls ADA envelope expression:

TAAAAAATGAAAAAATATTCTAATTTATAGGACGGTTTTGATTTTCTTTTTTC
TATGCTATAAATAATAATA

ADA envelope truncated:

ATGAAAGTGAAGGGGATCAGGAAGAATTATCAGCACTTGTGGAAATGGGGC
ATCATGCTCCTTGGGATGTTGATGATCTGTAGTGCTGTAGAAAATTTGTGGG
TCACAGTTTATTATGGGGTACCTGTGTGGAAAGAAGCAACCACCACTCTATT
TTGTGCATCAGATGCTAAAGCATATGATACAGAGGTACATAATGTTTGGGCC
ACACATGCCTGTGTACCCACAGACCCCAACCCACAAGAAGTAGTATTGGAA
AATGTGACAGAAAATTTTAACATGTGGAAAAATAACATGGTAGAACAGATGC
ATGAGGATATAATCAGTTTATGGGATCAAAGCCTAAAGCCATGTGTAAAT
AACCCCACTCTGTGTTACTTTAAATTGCACTGATTTGAGGAATGTTACTAATA
TCAATAATAGTAGTGAGGGAATGAGAGGAGAAATAAAAACTGCTCTTTCAA
TATCACCACAAGCATAAGAGATAAGGTGAAGAAAGACTATGCACTTTTCTAT
AGACTTGATGTAGTACCAATAGATAATGATAATACTAGCTATAGGTTGATAAA
TTGTAATACCTCAACCATTACACAGGCCTGTCCAAAGGTATCCTTTGAGCCA
ATTCCCATACATTATTGTACCCCGGCTGGTTTTGCGATTCTAAAGTGTAAG
ACAAGAAGTTCAATGGAACAGGGCCATGTAAAAATGTCAGCACAGTACAAT
GTACACATGGAATTAGGCCAGTAGTGTCAACTCAACTGCTGTAAATGGCAG
TCTAGCAGAAGAAGAGGTAGTAATTAGATCTAGTAATTTACAGACAATGCA
AAAAACATAATAGTACAGTTGAAAGAATCTGTAGAAATTAATTGTACAAGACC
CAACAACAATACAAGGAAAAGTATACATATAGGACCAGGAAGAGCATTTTAT
ACAACAGGAGAAATAATAGGAGATATAAGACAAGCACATTGCAACATTAGTA
GAACAAAATGGAATAACACTTTAAATCAAATAGCTACAAAATTAAGAACAA
TTTGGGAATAATAAAACAATAGTCTTTAATCAATCCTCAGGAGGGGACCCAG
AAATTGTAATGCACAGTTTTAATTGTGGAGGGGAATTCTTCTACTGTAATTCA
ACACAACCTGTTTAATAGTACTTGGAATTTAATGGTACTTGGAATTTAACACA

FIG. 15F

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ATCGAATGGTACTGAAGGAAATGACACTATCACACTCCCATGTAGAATAAAA
CAAATTATAAATATGTGGCAGGAAGTAGGAAAAGCAATGTATGCCCCTCCCA
TCAGAGGACAAATTAGATGCTCATCAAATATTACAGGGCTAATATTAACAAG
AGATGGTGGAACCTAACAGTAGTGGGTCCGAGATCTTCAGACCTGGGGGAG
GAGATATGAGGGACAATTGGAGAAGTGAATTATATAAATATAAAGTAGTAAA
AATTGAACCATTAGGAGTAGCACCCACCAAGGCAAAAAGAAGAGTGGTGCA
GAGAGAAAAAAGAGCAGTGGGAACGATAGGAGCTATGTTCTTGGGTTCTT
GGGAGCAGCAGGAAGCACTATGGGCGCAGCGTCAATAACGCTGACGGTAC
AGGCCAGACTATTATTGTCTGGTATAGTGCAACAGCAGAACAATTTGCTGAG
GGCTATTGAGGCGCAACAGCATCTGTTGCAACTCACAGTCTGGGGCATCAA
GCAGCTCCAGGCAAGAGTCCTGGCTGTGGAAAGATACCTAAGGGATCAACA
GCTCCTAGGGATTTGGGGTTGCTCTGGAAACTCATCTGCACCACTGCTGT
GCCTTGGAATGCTAGTTGGAGTAATAAACTCTGGATATGATTTGGGATAAC
ATGACCTGGATGGAGTGGGAAAGAGAAATCGAAAATTACACAGGCTTAATAT
ACACCTTAATTGAGGAATCGCAGAACCAACAAGAAAAGAATGAACAAGACTT
ATTAGCATTAGATAAGTGGGCAAGTTTGTGGAATTGGTTTGACATATCAAATT
GGCTGTGGTATGTAAAAATCTTCATAATGATAGTAGGAGGCTTGATAGGTTT
AAGAATAGTTTTTACTGTACTTTCTATAGTAAATAGAGTTAGGCAGGGATACT
CACCATTGTCATTTAGACCCACCTCCCAGCCCCGAGGGGACCCGACAGG
CCCGAAGGAATCGAAGAAGAAGGTGGAGACAGAGAC

PmH5 promoter (which controls HXB2 gag pol expression):

AAAAATTGAAAATAAATACAAAGGTTCTTGAGGGTTGTGTTAAATTGAAAGC
GAGAAATAATCATAAATA

HXB2 gag pol (with safety mutations, Δ integrase):

ATGGGTGCGAGAGCGTCAGTATTAAGCGGGGGGAGAATTAGATCGATGGGA
AAAAATTCGGTTAAGGCCAGGGGGGAAAGAAAAAATATAAATTAAACATATA
GTATGGGCAAGCAGGGAGCTAGAACGATTGCGAGTTAATCCTGGCCTGTTA
GAAACATCAGAAGGCTGTAGACAAATACTGGGACAGCTACAACCATCCCTT
CAGACAGGATCAGAAGAAGCTTAGATCATTATATAATACAGTAGCAACCCTCT
ATTGTGTGCATCAAAGGATAGAGATAAAAGACACCAAGGAAGCTTTAGACAA
GATAGAGGAAGAGCAAAACAAAAGTAAGAAAAAAGCACAGCAAGCAGCAGC
TGACACAGGACACAGCAATCAGGTCAGCCAAAATTACCCTATAGTGCAGAA
CATCCAGGGGGCAAATGGTACATCAGGCCATATCACCTAGAACTTTAAATGCA
TGGGTAAAAGTAGTAGAAGAGAAGGCTTTCAGCCCAGAAGTGATACCCATG
TTTTCAGCATTATCAGAAGGAGCCACCCCAAGATTAAACACCATGCTAA
ACACAGTGGGGGGACATCAAGCAGCCATGCAAATGTTAAAAGAGACCATCA
ATGAGGAAGCTGCAGAATGGGATAGAGTGCATCCAGTGCATGCAGGGCCT
ATTGCACCAGGCCAGATGAGAGAACCAAGGGGAAGTGACATAGCAGGAAC
TACTAGTACCCTTCAGGAACAAATAGGATGGATGACAAATAATCCACCTATC
CCAGTAGGAGAAATTTATAAAAGATGGATAATCCTGGGATTAAATAAATAG
TAAGAATGTATAGCCCTACCAGCATTCTGGACATAAGACAAGGACCAAAAAGA
ACCCTTTAGAGACTATGTAGACCGGTTCTATAAACTCTAAGAGCCGAGCAA

FIG. 15G

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GCTTCACAGGAGGTAAAAAATTGGATGACAGAAACCTTGTTGGTCCAAAATG
CGAACCCAGATTGTAAGACTATTTTAAAAGCATTGGGACCAGCGGCTACACT
AGAAGAAATGATGACAGCATGTCAGGGAGTAGGAGGACCCGGCCATAAGG
CAAGAGTTTTGGCTGAAGCAATGAGCCAAGTAACAAATTCAGCTACCATAAT
GATGCAGAGAGGGCAATTTTAGGAACCAAAGAAAGATTGTTAAGTGTTTCAAT
TGTGGCAAAGAAGGGGCACACAGCCAGAAATTGCAGGGGCCCTAGGAAAAA
GGGCTGTTGGAAATGTGGAAAGGAAGGACACCAAATGAAAGATTGTACTGA
GAGACAGGCTAATTTTTTAGGGAAGATCTGGCCTTCCTACAAGGGAAGGCC
AGGGAATTTTCTTCAGAGCAGACCAGAGCCAACAGCCCCACCAGAAGAGAG
CTTCAGGTCTGGGGTAGAGACAACAACCTCCCCCTCAGAAGCAGGAGCCGAT
AGACAAGGAACTGTATCCTTTAACTTCCCTCAGATCACTCTTTGGCAACGAC
CCCTCGTCACAATAAAGATAGGGGGGGCAACTAAAGGAAGCTCTATTAGATA
CAGGAGCAGATGATACAGTATTAGAAGAAATGAGTTTGCCAGGAAGATGGA
AACCAAAAATGATAGGGGGAATTGGAGGTTTTATCAAAGTAAGACAGTATGA
TCAGATACTCATAGAAATCTGTGGACATAAAGCTATAGGTACAGTATTAGTA
GGACCTACACCTGTCAACATAATTGGAAGAAATCTGTTGACTCAGATTGGTT
GCACTTTAAATTTTCCCATTAGCCCTATTGAGACTGTACCAGTAAAATTAAG
CCAGGAATGGATGGCCCAAAGTTAAACAATGGCCATTGACAGAAGAAAAA
ATAAAAGCATTAGTAGAAATTTGTACAGAAATGGAAAAGGAAGGGAAAATTT
CAAAAATTGGGCCTGAGAATCCATACAATACTCCAGTATTTGCCATAAAGAA
AAAAGACAGTACTAAATGGAGGAAATTAGTAGATTTAGAGAACTTAATAAG
AGAACTCAAGACTTCTGGGAAGTTCAATTAGGAATACCACATCCCGCAGGG
TTAAAAAAGAAAAAATCAGTAACAGTACTGGATGTGGGTGATGCATATTTTC
AGTTCCCTTAGATGAAGACTTCAGGAAGTATACTGCATTTACCATACCTAGT
ATAACAATGAGACACCAGGGATTAGATATCAGTACAATGTGCTTCCACAGG
GATGGAAAGGATCACCAGCAATATTCCAAAGTAGCATGACAAAAATCTTAGA
GCCTTTTAAAAAACAAAATCCAGACATAGTTATCTATCAATACATGAACGATT
TGTATGTAGGATCTGACTTAGAAATAGGGCAGCATAGAACAAAAATAGAGGA
GCTGAGACAACATCTGTTGAGGTGGGGACTTACCACACCAGACAAAAAACA
TCAGAAAGAACCTCCATTCTTTGGATGGGTTATGAACTCCATCCTGATAAA
TGGACAGTACAGCCTATAGTGCTGCCAGAAAAAGACAGCTGGACTGTCAAT
GACATACAGAAGTTAGTGGGGAAATTGAATACCGCAAGTCAGATTTACCCA
GGGATTAAAGTAAGGCAATTATGTAAACTCCTTAGAGGAACCAAAGCACTAA
CAGAAGTAATACCACTAACAGAAGAAGCAGAGCTAGAACTGGCAGAAAACA
GAGAGATTCTAAAAGAACCAGTACATGGAGTGTATTATGACCCATCAAAGA
CTTAATAGCAGAAATACAGAAGCAGGGGGCAAGGCCAATGGACATATCAAT
TTATCAAGAGCCATTTAAAAATCTGAAAACAGGAAAATATGCAAGAATGAGG
GGTGCCCACTAATGATGTAAACAATTAACAGAGGCAGTGCAAAAAATAA
CCACAGAAAGCATAGTAATATGGGGAAAGACTCCTAAATTTAACTACCCAT
ACAAAAGGAAACATGGGAAACATGGTGGACAGAGTATTGGCAAGCCACCTG
GATTCCTGAGTGGGAGTTTGTTAATACCCCTCCTTTAGTGAAATTATGGTAC
CAGTTAGAGAAAGAACCATAGTAGGAGCAGAAACCTTCTATGTAGATGGG
GCAGCTAACAGGGAGACTAAATTAGGAAAAGCAGGATATGTTACTAACAAA
GGAAGACAAAAGGTTGTCCCCCTAACTAACACAACAAATCAGAAAACCTCAGT
TACAAGCAATTTATCTAGCTTTGCAGGATTCAGGATTAGAAGTAAACATAGTA
ACAGACTCACAAATATGCATTAGGAATCATTCAAGCACAAACCAGATAAAAGTG

FIG. 15H

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AATCAGAGTTAGTCAATCAAATAATAGAGCAGTTAATAAAAAAGGAAAAGGT
CTATCTGGCATGGGTACCAGCACACAAAGGAATTGGAGGAAATGAACAAGT
AGATAAATTAGTCAGTGCTGGAATCAGGAAAATACTATTTTATAGATGGAATA
GATAAGGCCCAAGATGAACATTAG

FIG. 15I

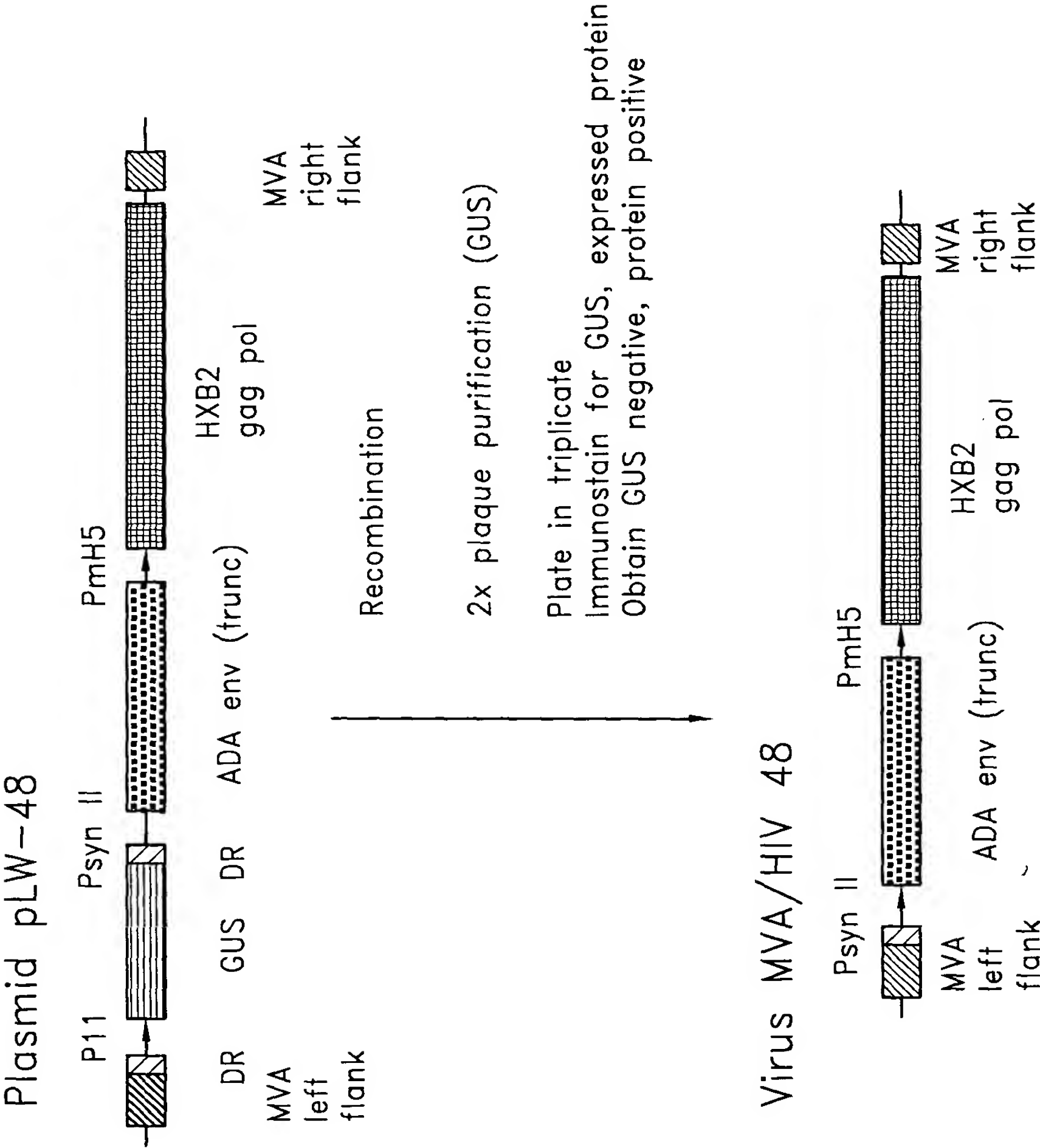


FIG. 16

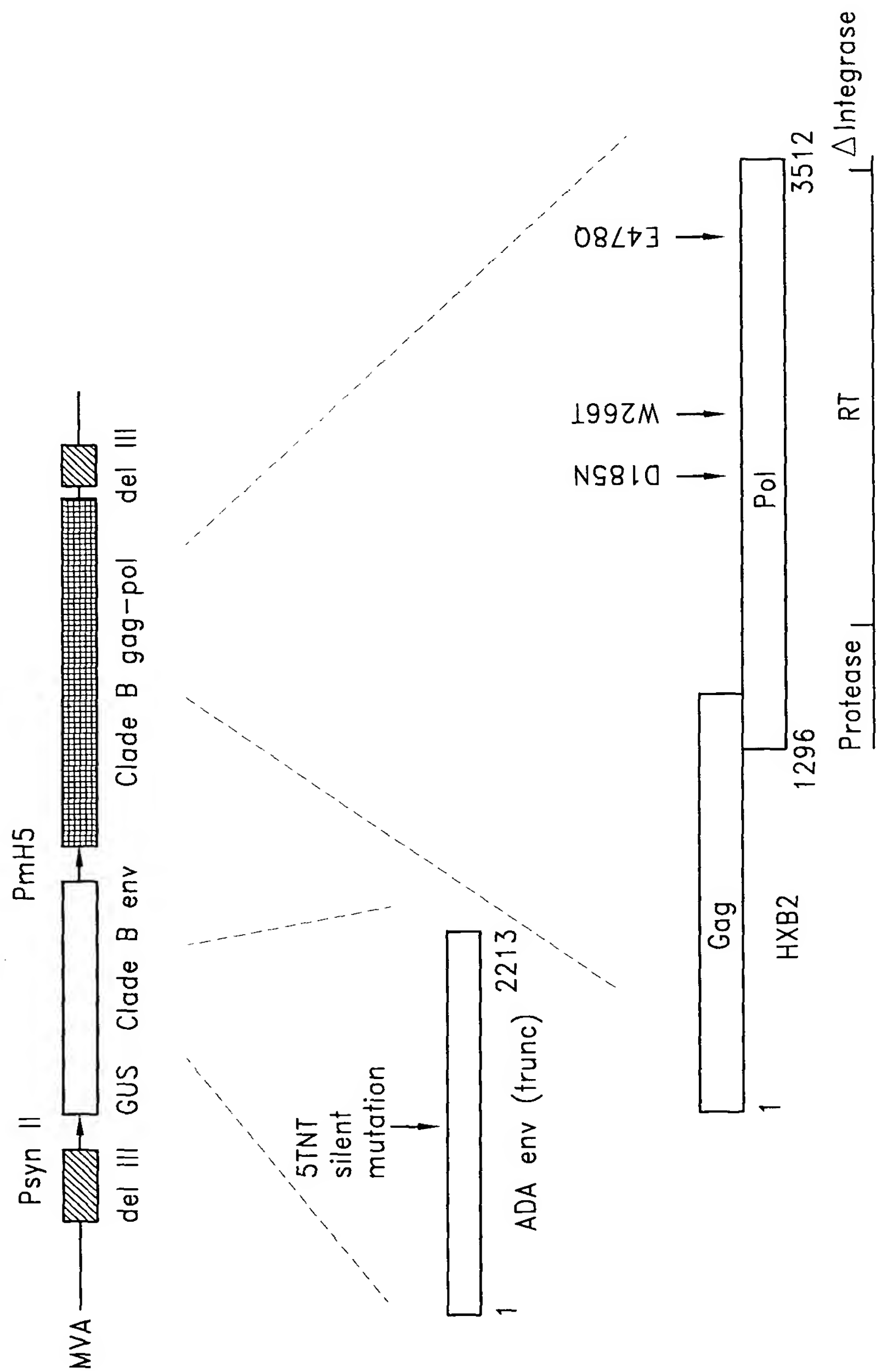


FIG. 17

Sequence of new Psyn II promoter:

Early part of promoter	Early start site
Critical region	
<u>TAAAAATGAAAAATATTCTAATTATAGGACGGT</u>	
Late part of promoter	
	TTTGATTTTCITTTTTTCTATGCTATAAAATAATAATA

FIG. 18